THE RAILWAY GAZETTE

A Journal of Management, Engineering and Operation

INCORPORATING

Railway Engineer · TRANSPORT · The Railway News

The Railway Times · Herapath's Railway Journal · THE RAILWAY RECORD.

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TO CALLERS AND TELEPHONERS

Until further notice our office hours are:—
Mondays to Fridays - 9.30 *a.m. till* 5.0 *p.m.*
The office is closed on Saturdays

Suburban First Class Travel

RUMOUR has recently been rife that first class travel on the London suburban and outer suburban lines will shortly be abolished. These reports doubtless had their origin in a remark by Colonel J. J. Llewellin, Joint Parliamentary Secretary to the Ministry of War Transport who, as reported in THE RAILWAY GAZETTE of August 15, said in the House of Commons on July 31, in answer to suggestions that first class travel should be abolished, that he thought the Ministry could do something on the short-distance suburban trains, especially for Londoners, and that that would be looked into very carefully. It is probable that the change he envisaged will be made shortly. As long ago as July 12, 1935, THE RAILWAY GAZETTE published a detailed study of the financial effects of abolishing first class tickets. Consideration was then given to abolition throughout the railways of the country and the conclusion was reached that the direct loss in revenue would be £2,766,000 a year and the total possible economies not more than £1,000,000 a year. The economies included some £600,000 a year from upkeep of seats, about £250,000 in saving of coal since uniformity of seats would probably reduce the weight of trains, and £150,000 for miscellaneous economies such as reduced ticket inspection, less clerical labour, less time occupied in marshalling yards, smaller stocks of carriage equipment, and so forth. On the other hand, in peacetime at all events, the possibility must not be overlooked that a good many first class ticket holders—more particularly suburban dwellers—might well transfer their allegiance from rail to road if denied the relative comfort and seclusion only to be secured by the holder of first class tickets.

Ministry of War Transport Functions

In May last when the Ministry of War Transport was formed by the amalgamation of the Ministries of Shipping and Transport it was stated that there would be a certain amount of interior reorganisation and that some functions then exercised by the Ministry of Transport would probably be transferred to the Board of Trade or other appropriate departments. One section which was a fairly obvious choice for segregation was that dealing with electricity matters, and it has now been decided that responsibilities in connection with electricity shall be transferred to the Board of Trade. In future the Electricity Commissioners will report to the President of the Board of Trade instead of, as hitherto, to the Minister whose primary functions are concerned with transport. It will be necessary for an Order in Council to be made to give effect to the transfer, and this is now being drafted by the law officers. The Order will specify the date as from which the transfer is to be effective and thenceforward the Ministry of War Transport will cease to exercise control over electricity matters, which have formed a part of the responsibilities of the Ministry and its predecessor ever since the establishment of the Ministry of Transport in 1919.

Trade Union Recognition

Dismissal of a woman employee led to a recent stoppage of work at a war materials factory. The Court of Inquiry into the matter has found that the fundamental cause of the dispute was the refusal of the managing director to have any dealings with any trade unions and the active steps which he took to prevent, if possible, his workpeople joining the National Union of General & Municipal Workers. This attitude of the managing director is found by the Court to be against the national interest in wartime. The finding goes on to say that the almost universal practice and well tried method of recognising and negotiating with the trade union, or unions, fairly representing the workers, should be adopted in these works. In fact the overwhelming majority of the workpeople at this factory belongs to the union. It was claimed by the managing director that the woman employee in question was dismissed in the interests of production, that the factory had been re-staffed without undue delay, and that production was on a higher scale than before the stoppage of work. The Court finds that Mr. Brumby, a

district organiser of the union, acted with great restraint and dignity in a very trying incident at the office when the managing director sent for the police on a totally unfounded charge against Mr. Brumby.

Industrial Railways in Newfoundland

Apart from the Newfoundland Railway, there are on the island two industrial railways, namely, the Wabana Iron Mines Railway and Anglo-Newfoundland newsprint line. The Wabana Iron Mines Railway is owned and operated by the Dominion Steel & Coal Corporation Limited in connection with its iron ore mines at Wabana, Conception Bay; the company has its head office at Sydney, Nova Scotia, Canada. The rolling stock consists of approximately 1,200 cars of 2-ft. gauge and 1·6-ton capacity; 375 cars of 3-ft. gauge and 4-ton capacity; 4 cars of 3-ft. gauge and 20-ton capacity; two 13-ton electric trolley locomotives of 3-ft. gauge; and two 5-ton electric trolley locomotives of 3-ft. gauge. The rail used is 85-lb. in 33- and 39-ft. sections, weighing 60 lb. in 33-ft. sections, 50 lb. in 30-ft. sections, and 30 and 20 lb. of various lengths. During 1940, approximately one mile of new 2-ft. gauge track and one mile of 3-ft. gauge track were laid; and one mile of 2-ft. gauge track was abandoned. The Wabana railway is 36¾ miles in length (27 in the mines), and the gauges are 2 and 3 ft. The other line is owned and operated by the Anglo-Newfoundland Development Co. Ltd., in connection with its newsprint manufacturing mills at Grand Falls. This railway is 55 miles in length and uses 12 miles of 80-lb. rails in 30-ft. lengths; 20 miles of 70-lb. rails in 30-ft. and 33-ft. lengths; and 23 miles of 50-lb. rails in 33-ft. lengths. The gauge is 3 ft. 6 in. The equipment comprises 9 locomotives, 305 cars (4 passenger cars, 100 box cars of 20-ton capacity, 30 box cars of 30-ton capacity, 39 coal dump cars of 30-ton capacity, 120 flat cars of 20-ton capacity), and 3 snow ploughs. No new track was laid or old track abandoned during 1940.

Locomotives for Turkey

British locomotive manufacturers are at present engaged in building 24 locomotives for Turkey. These are part of the £1,000,000 contract for 58 engines placed with this country in April, 1939, and details of which were given in our issue of April 14, 1939. Wartime factors have delayed production of the engines, which are in large part based on German-built locomotives that were in general use in Turkey before the present contract was secured by British manufacturers. The builders, however, proposed, and the Turkish State Railways Administration officials accepted, the incorporation of certain modifications and improvements based on British practice and experience which should do much to raise the general efficiency of the engines. Notwithstanding the heavy calls being made at home on the British locomotive building industry, it is satisfactory to be able to record that 35 locomotives, of a value of nearly £400,000, were sent overseas in the three months ended June 30—seven more than in the preceding quarter. During the same three months Britain also shipped 24 locomotive boilers, which raised the total for the first six months of this year to 62 of an aggregate value of some £140,000.

Railway Assessments

The report of the Railway Assessment Authority for the year ended March 31, 1941, records the progress made with the second roll, which embodies the net annual valuations of the four main-line railway companies for the quinquennial period 1936-1941. During the year the authority "revised" the valuations of the L.M.S.R., G.W.R., and L.N.E.R., which had already been "completed," and made "supplemental revisions" in the case of the Southern Railway. Appeals by the first three companies on questions of principle are outstanding, and it was stated in the last report that it had been agreed with the L.M.S.R. and L.N.E.R. that, subject to the selection and litigation of suitable test cases to obtain the decision of the Courts on points of principle, the majority of the items in dispute should, without prejudice, be withdrawn by those two companies. In the case of the G.W.R. agreement has now been reached on a large number of items. At a conference in February last with the Chairman of the authority a suggestion was put forward on behalf of the four main-line companies that the figures of net annual valuation adopted, after negotiation, for the second roll *cumulo* of each company should be continued for the third quinquennium, and that, without prejudice, there should be a *status quo* on all matters in dispute; in that event the companies would withdraw appeals on the second roll and leave the contest on points of principle till after the war. Subject to treating appeals on the second roll as a separate matter, and to the provision of certain indispensable data, the authority will be in a position to give full consideration to the proposal of the companies.

A New York Railway Goes Underground

The Eastern Parkway (Brooklyn) to 125th Street (Queens) section of the Long Island Railroad is being lowered and converted into a subway. It is nearly five miles in length and the estimated cost of this work is $23,800,000. The railway follows the line of Atlantic Avenue, and hitherto 1⅛ miles of the above length of it was in the form of an elevated line. Elsewhere the central 50 ft. width of the avenue was occupied by the railway and there were two 35-ft. roadways, one on each side of the line, throughout most of this section. Work was begun in 1939 and is expected to be finished next summer. The result will be a 120-ft. boulevard with a 5-ft. cushion of earth between the roof of the subway and the roadway. The subway will consist of a reinforced-concrete invert about 30 ft. below street level, reinforced-concrete side walls, and a roof of I beams and concrete jack arches, but there will be a central line of columns between the two tracks supporting a 5-ft. high continuous collision wall. Where the line is at present elevated, each of the columns carrying it is now supported by two 2ft.-square pedestals, founded about 5 ft. below maximum excavation depth for the subway, which is directly below the elevated. Elsewhere, a temporary track was laid on each side the original railway, which was then dismantled to allow the subway to be constructed below its alignment. The work is being financed from the New York State Grade Crossing Fund, and the Transit Commission of that State is supervising the work through the agency of Mr. Henry Heins, Chief Engineer and his staff. For the railway, Mr. C. E. Adams is the Chief Engineer in charge of supervision.

Automatic Signals with No Stop Indication

On some lines in America, where heavy freight trains are operated, it has been the practice to allow automatic signals on up grades, passable under the stop-and-proceed rule, to be passed without a stop by certain classes of trains, in an endeavour to eliminate the troubles frequently attendant on re-starting in such situations, thus giving a more permissive character to the working. There are even railways which arrange the signals on these stretches of line so that their most restrictive indication is "caution," which in that case becomes a permissive block indication imposing a certain speed limit. As may be expected, opinions vary respecting the merits of these different arrangements and the means used—such as signboards and marker lights—to distinguish these "grade signals," as well as the precise rules governing their use. Should such a method of working be developed in this country, it is more likely that a "danger" indication qualified by a "call-on" aspect would be adopted, preferably with some approach time-control, leaving "caution" to denote a clear section.

Some American Sleeper Statistics

The railways of the U.S.A. measure approximately 420,000 miles of single track and contain some 1,250,000,000 sleepers, or crossties, as they are commonly termed in America. The annual renewals are 50,000,000, each of which represents an outlay of approximately $1.75, including the original cost of the sleeper, freight from the forest to the site, preservative treatment, distribution, and installation in the track. Sleepers thus amount to a total investment of some $2,187,500,000. In fact, sleepers ordinarily cost the U.S.A.

railways almost twice as much as rail, and constitute the largest single item of expense in the Maintenance-of-Way Department. These and many other interesting figures were given by Mr. C. D. Turley, Chief Tie Inspector, Illinois Central System, Chicago, in an address which he delivered before the Tie Manufacturers' Association convention, on May 22 last. Satisfactory maintenance is stated to have cost 14 cents a sleeper per annum, or approximately $175,000,000. In the early years of U.S.A. railways, labour costs were low, timber was cheap, there was virtually an unlimited supply, and as a result there was no special urge to obtain longer life for sleepers. By 1900, however, a rapidly decreasing timber supply caused the railways to be faced with the problem of either finding substitute material for sleepers, or developing some method of preservation. Today some 250,000,000 cu. ft. of timber, including 20,000,000 lineal ft. of piling and 45,000,000 sleepers, are treated annually. Different conditions in Great Britain and absence of adequate home supplies have, of course, caused sleeper preservation to be practised regularly for upwards of a century.

Detecting Fissures in Rails

From time to time the question is asked as to why no method of *in situ* detection of rail defects, similar to the Sperry detector cars now widely used in North America, has ever been tried in Great Britain. The answer is that the transverse fissure, a peculiarly dangerous defect because there is no external evidence of its presence, and the discovery of which before failure of the rail is the primary object of Sperry detection, has been of comparatively rare occurrence in this country. For many years past British railways have worked to considerably lower percentages of carbon in their rails than American, and before the safeguard of controlled cooling was introduced winters here seldom produced the extremes of low temperature which have accelerated the cooling of rails after manufacture in American mills, and so have encouraged the development of shatter-cracking in rail heads. There is, furthermore, no record in the present century of any serious derailment having been caused in this country as the result of breakage of a rail containing a transverse fissure. The extent of the American problem is seen in the statistics given in an article on p. 216, which shows that in the ten years that Sperry detector cars have been at work, they have been responsible for the removal from the track of nearly 500 miles of rails containing fissures, and have recorded other defects extending over a total of 600 miles of rail. In addition to these, many undetected rails with fissures have broken in the track, and in some instances have been responsible for disastrous derailments. Although American rail-mills are now applying controlled cooling as a standard practice, detection on rails previously rolled must go on for an indefinite time to come, in the interests of safety

Three-Figure Speed on a Cycle

The complications of petrol rationing, and the excessively doleful pictures of rail travelling discomforts painted or forecast at intervals in the daily press, have caused many to feel a new respect for the bicycle. Limited in its range and speed only by the physique of the user, the machine has been a challenge to the exertions of many who are not content for it to remain an undistinguished half-way house between the labour of pedestrianism and the luxury of the motorbus. As a result, the bicycle has this year entered the ranks of vehicles achieving three-figure speeds. Pedalling behind a windshield attached to a motorcar at Bakersfield, California, on May 17, a Frenchman, Alfred Letourner, covered a measured mile at 108·92 m.p.h. It is acknowledged, however, that the pacing vehicle with windshield has a more direct bearing upon the cyclist's performance than the mere sensory stimulus of the proverbial carrot on the donkey, the rider tending to be drawn along by the vacuum created like a scrap of paper whirling in the wake of the Silver Jubilee. The relation of such performances to cycling as we understand and practise it seems far more remote than that of a streamlined Pacific to a contractor's saddle-tank locomotive.

Organisation of the Railways

THE recent change in the chairmanship of the Railway Executive Committee, whereby Sir Ralph Wedgwood retired and Sir Alan Anderson took his place and also became Controller of Railways at the Ministry of War Transport, has inevitably led to the suggestion that some reorganisation of the railways is at least under consideration. In its City Notes of August 15, *The Times* refers to some of these suggestions, which have varied from the proposal for outright unification and public ownership of the companies to the payment by the Government of a fixed rental for the use of the railways during the war. Our contemporary understands, too, that the discussions between the Government and the companies for a new financial agreement have reached an advanced stage, and that in the negotiations which are being conducted on behalf of the Government by Lord Leathers there has recently been a change of front. If there was ever any idea of unification and public ownership it has now been abandoned, and, in fact, the suggestion first made in another quarter is given currency in *The Times* that much of Lord Leathers' effort since his appointment in May last has been devoted to resisting proposals for nationalisation. The City Editor of that newspaper goes to some length in considering the alternative to an equitable rental for the use of the railways during the war. He agrees that in the absence of the financial arrangements under which the railways have been operating since they came under control, the railways would now be earning the whole of their standard revenue, which, including the London Passenger Transport Board, would amount to some £55,250,000. In point of fact, the railways in 1940 earned £42,300,000, which was about midway between the stage one and stage two revenues provided for under the agreement. Because of the lag in the adjustment of charges to higher costs that figure did not by any means represent their full rights. The true earnings it is estimated would have been in excess of £50,000,000. Because of the change which it has become necessary to make in the provisions relating to the insurance of railway war damage, that figure would have to be further written up if the rental were to take accord of the full rights of stockholders under the agreement. Finally, in dealing with Excess Profits Tax, of which nothing has been heard of late in relation to the railway companies, *The Times* points out that before the war the railways were making sub-normal profits, and on a capital standard they would almost certainly not become liable for E.P.T. until net revenues were running materially higher than the average of 1936 and 1937. The conclusion is reached that, although in practice any fixed annual rental would have to be a compromise in principle, it ought to be a compromise considerably above the 1940 figure and not between that and the minimum guarantee under the original financial agreement, otherwise the railways would be subject to a double limitation of revenue which was characterised by the late Lord Stamp as " unique and inequitable."

As to any proposed internal reorganisation of the railway system, it is probable that this has been set on one side. It is possible that at one time it was contemplated that some unification of control of the engineering departments of the various railways should be effected, and similar steps taken with the traffic departments, the operating departments, and so forth. Particularly in present circumstances there would appear little justification for such sweeping changes. There can be no doubt that the main-line railways are working together harmoniously in the national interest, and are achieving a wide measure of success obtainable only by the close co-operation of the companies and their singleness of purpose. To attempt to put into effect any far-reaching plan of the kind postulated would be more likely to result in disorganisation and to interfere with smooth working than to further the ends desired. It is pertinent to recall that the organisation of the L.M.S.R. system took some ten years to complete and to bring to fruition, and to attempt an even greater measure of co-ordination at a time of war, and when the efforts of the chief officers and of their subordinates are necessarily strained to the utmost to get the best use out of the railways in the interests of the nation, would be to court disaster. It should not be overlooked, too, that from a practical view point very close liaison between similar departments of all the companies already exists through the medium

XUM

of the R.E.C. committees, which meet frequently and are attended by the chief officers of all the railways. It may thus be said that co-ordination of effort is already effective. It would obviously be impossible to take measures during wartime to bring about physical co-ordination, for neither man power nor materials would be available, for instance, for such work as equipping all lines with A.T.C., or for a general scheme of electrification. Further it must be recognised that the physical characteristics of certain of the lines, in present circumstances, preclude complete interchangeability. Southern Railway electric rolling stock, for example, cannot be used on other than its home lines. Another important aspect which must not be overlooked is that of the effect upon the personnel of the railways of any radical change of the kind envisaged. It could scarcely fail to introduce an element of uncertainty among the 600,000 employees and officers which at the least could not be expected to be reflected in increased efficiency. Furthermore, the creation of even larger units than the present would necessarily mean that control would become more remote, with the probability that good individual work would be less likely to be noticed and rewarded, and equally that poor work would be more likely to pass without detection. Whatever may be said in favour of the exercise in peace time of the energies of those who see progress to be achieved only through co-ordination of all things, there is nothing to be said for indulging in experiments of this kind during an emergency.

South Australian Government Railways

EARNINGS during the year ended June 30, 1940, according to the report for that period received from Mr. C. B. Anderson, the Railways Commissioner, reflected an increase of £50,189 over those for the preceding year. This increase is principally accounted for in the carriage of wheat; there was also an advance in passenger traffic receipts including refreshment services, partly due to the movement of troops. There was an increased traffic in wool, and in general merchandise, but a decrease in the earnings from minerals, due to a lesser tonnage forwarded from Broken Hill. Working expenses, including pensions, increased by only £7,055, but interest and sinking fund charges, etc., advanced by £26,444, and the total deficit on the year's working was £16,690 lower.

Country rail passenger journeys, including those of season-ticket holders, were 1,363,311, an increase of 99,859, and their revenue of £398,883 was higher by £27,945 or 7·53 per cent. The 16,278,455 suburban rail passenger journeys showed an advance of 13,256 and brought in £230,857, or £1,412 more. Total first class receipts were £112,535 and represented 17·87 per cent. (against 18·74 per cent.) of the total rail passenger receipts. Suburban first class receipts are negligible and no revenue from first class suburban season tickets has been recorded since 1931. Road motor passenger receipts totalled £677, an increase of £38, and road motor goods and parcels receipts were £15,012, an increase of £1,629. Railway receipts from goods and mineral traffic amounted to £1,959,261, an increase of £24,397, but the livestock receipts of £207,303 showed a diminution of £1,857. Refreshment and dining car services and bookstalls made a profit of £15,178, as compared with £13,628 in the previous year. General results are compared in the accompanying summary:—

	1938-39	1939-40
Miles open	2,557¾	2,557¾
Train-miles	6,177,407	5,928,416
Rail passenger journeys	17,528,651	17,641,766
Rail-borne goods, tons	2,445,568	2,485,939
Average haul, miles	131	124·8
Operating ratio, per cent.	90·1	88·9
	£	£
Capital cost of open lines	28,613,526	28,752,864
Gross earnings	3,133,373	3,183,562
Expenses, including pensions	2,823,026	2,830,081
Surplus	310,347	353,481
Interest, sinking fund, and exchange	1,322,191	1,348,635
Total deficit	1,011,844	995,154

It is noteworthy that the increased traffic was handled with a decreased total train mileage amounting to 248,991 train-miles. As a result of the economies in working expenses thus made possible the administration was able to absorb substantial increases in working costs, such as enhanced price of coal £26,978, increased price of petrol £6,367, together with higher prices of other materials and supplies, and yet finish the year with a total increased working expenditure (apart from pensions) of only £4,323. Train order working has been extended to the Balhannah Mount Pleasant line, and between Renmark and Barmera, replacing the system of permissive block previously in force. This is part of a programme under which train order working is gradually being extended to all country lines carrying light traffic. Automatic flashing light signals have been provided at one additional level crossing (Monarto South) and fixed reflecting signs have been erected at various crossings to replace the older pattern warning boards.

Double-Wire Signalling in Assam

IT rarely happens now that a signal engineer, when taking up his duties, finds not only that he is the first specialist officer for signalling his railway has ever had, but also that there is practically no equipment on the line and he has therefore a clear field to work in, unhampered by the existence of old designs. Mr. E. W. Baker, Signal Engineer of the Assam-Bengal Railway, on arriving at Chittagong in 1928, was fortunate enough to be in this position, and has taken full advantage of the opportunity it offered to persuade his management to introduce a new system of signal aspects, for use with double-wire operation, constituting a radical departure from anything previously seen in India. When he attended the meeting of the Signal Section of the Association of American Railroads, held in Washington in October, 1940, Mr. Baker read an interesting paper on the development of the equipment used on his railway, and on page 213 we publish an article based thereon. Although suggestions for using wires for point operation were actually made in India very many years ago, no serious interest appears to have been taken in the subject until about the end of the last war, when Mr. S. T. Dutton, then Signal Engineer of the East Indian, persuaded his railway to install a few examples of wire-worked points to a special design of his own. Double-wire operation of both points and signals had, of course, long been known in some Continental countries and reached a high degree of perfection there. It had also been used in a few places where Continental ideas in such matters had some influence, as in the parts of South Africa where Dutch engineers had been at work. It was practically unknown in Great Britain, where it was not officially recognised, but began to attract the attention of the signalling industry here a few years after the 1914 war, when there appeared to be a possibility of its finding favour for overseas work under certain conditions, as eventually proved to be the case. Equipment was designed to work with the British type of permanent way and signals and before long quite an amount of it had been supplied to railways in widely different localities, some being in this country. These designs were the subject of much interesting discussion at the Institution of Railway Signal Engineers on various occasions.

The ability to work points easily and economically at considerable distances made the double-wire method appeal to those who desired to see centralised instead of dispersed operation at their crossing loop stations, of whom Mr. G. E. Cuffe, then General Manager of the Assam-Bengal Railway, was one. That company had in fact already, before Mr Baker assumed duty in India, ordered equipment for a certain number of stations to be signalled with two-position signals on the well-known Indian class "B" system. Experience with the installation and maintenance of this apparatus led to alterations in both practice and design, and inspection of installations on the Continent was found of great assistance in settling certain difficult points of principle, and arriving at standard installation and maintenance rules. A very great deal of care and thought was devoted to the problem by Mr. Baker, over a period of several years. He also had the help of the signalling industry in India and the warm support of his own Traffic and Engineering Departments. Great interest was also shown in his work by the signal engineers of neighbouring lines. His examination of

Continental installations was followed by a fully documented report. Eventually the Government of India agreed to permit unrestricted speed over wire-operated point layouts and all obstacles to the fullest utilisation of the new methods were removed.

It was felt, however, that the ordinary complement of signals required by Indian standard rules was unnecessarily elaborate and costly, as well as the provision of the so-called isolating points, required by the Government unless a speed restriction of 30 m.p.h. was observed at crossing places. Such points can be effective only if there are any vehicles to isolate, and the speed restriction becomes an absurdity if there is nothing in the loop line, or lines, when a train requires to run through. The adoption of track circuit has, however, enabled the intent of the rule to be fulfilled, the lines being proved clear before a high-speed signal can be given. If anything is standing in the loop a restricted speed aspect is displayed to an approaching train. For this purpose the three-position upper quadrant semaphore has been adopted, a very interesting departure for India. The G.I.P.R. had endeavoured to get such a signal authorised in 1920—in this case for automatic power working—but without success. The revision of the General Rules issued in 1929 sanctioned it, but by that time light signals had become the accepted type for power installations. With double wires, however, there is no difficulty in working such a signal mechanically, even at a long distance from the lever, and the result has been to effect a great simplification in the signalling of the Assam-Bengal crossing loops, as will be seen from the diagrams accompanying the article above mentioned, where the use of the various aspects is fully explained.

In the first installations of this system on the southern section of the railway, every station was protected by home and outer signals, in accordance with the principles of " B " class working, but on the northern section visibility is short at some locations and fog prevails at certain seasons. Every station is, therefore, protected by an outer and a distant signal, the latter giving three indications, " caution," " attention," and " proceed," as did Weissenbruch's distant signal, introduced in Belgium in 1919 when, owing to wholesale war damage, that distinguished signalling authority found he also had a clear field in which to introduce new methods. The " attention " aspect at night on the Assam-Bengal Railway is double yellow, as in this country. Approval of this arrangement was obtained only after careful brake tests had been made with passenger and goods trains. We referred to the sanctioning of this signal in an editorial note in our issue for June 14, 1940, page 823. Although this system of aspects is essentially a speed signalling one, the driver can generally tell what route he is to take with the aid of it, the majority of layouts being very simple. A few junctions have been signalled by this method. Electric route locking has been installed, enabling the stationmaster to retain positive control over the setting of the loop points, once a movement has been signalled, until it may safely be changed. It is of interest to note that a local electric track lock has been fitted to certain double-wire point machines. Where complete power signalling is justified, however, the company has not hesitated to instal it and some important installations are in service. Mr. Baker has as yet been unable to introduce an unattended crossing place, together with one or two other proposals he has for some time had in view, but has already won for himself a place among the pioneers of advanced signalling methods in India. Double-wire working has apparently never been seen in America. The mere addition of a plain return wire to ordinary mechanical signals, long customary in the United States, cannot really be said to be double-wire working, as the term is understood in Europe, while point operation by wires has, we believe, never been seriously attempted there, if at all. Mr. Baker's paper at Washington was therefore a novel contribution to the proceedings of the Signal Section of the A.A.R., which is very seldom addressed by a signal engineer from outside the American continent.

LETTERS TO THE EDITOR

(*The Editor is not responsible for the opinions of correspondents*)

The Victory Rhythm

28, Hunters Grove, Kenton
August 6

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Many years ago, in the telegraph department of the old Lancashire & Yorkshire Railway (where double-bell sounder receivers were used) the learners used to *whistle* the Morse code, a low note for the dot and a higher note for the dash. I suppose the boys on Victoria station are whistling " V's " to one another nowadays. Incidentally,

the first four notes of the " Marseillaise " represent the Morse V as we used to whistle it, the low notes for the dots and a higher note for the dash.

I am, Sir,
Yours faithfully,
GEORGE L. BOAG

PUBLICATIONS RECEIVED

Anuario de los Ferrocarriles y de sus Transportes Coordinados. (Railway Yearbook & Co-ordinated Transport.) By A and J. Imedio. Madrid : Plaza de las Cortes 3 Pral. 394 pp., 8½ in. × 6 in. Price 12 pesetas.

Compañias Ferreas Españolas y Mapa Ferroviario. (Spanish Railways and Railway Map.) Same publisher. Price 8.50 pesetas.

Mapa de los Ferrocarriles Españoles. (Map of Spanish Railways.) Same publisher. Price 5 pesetas.

This yearbook is the first of its class to be published in Spain since before the Civil War, 1936-39. It contains full particulars of the Ministry of Public Works and other official organisations connected with railway construction and working, followed by similar information for the individual railway and tramway companies, and the names of officers and officials, with a full index. A comprehensive section of statistics gives detailed information as to mileage, gauge, rolling stock, etc., as well as figures relating to capital, earnings, and expenditure for every company. A third section contains summarised extracts of legislation since 1936 affecting railways.

Of the maps, the first is an excellent railway map showing very clearly in distinctive colours the different systems, with broad and narrow gauge and electrified and double-track indicated, and larger scale inserts of the areas round the principal cities. The second map is printed in 11 colours and shows the position of every station. These maps are among the clearest and most useful railway maps we have seen.

" How to Use Ardoloy."—With this as its title a small handbook for machine operators has recently been published by Alfred Herbert Limited of Coventry. Ardoloy is a high-speed cutting alloy made by the British Thomson-Houston Co. Ltd. and distributed by Alfred Herbert Limited. It has achieved considerable popularity in engineering machine shops and the issue of this handy booklet containing numerous instructions respecting the use of the alloy, which, it is emphasised, is not a high-speed steel and not to be treated as such, will doubtless be welcomed by all concerned. There are some interesting illustrations and a highly useful cutting speed chart.

XUM

THE SCRAP HEAP

THE " V " CAMPAIGN IN CANADA

With a spontaneous burst of enthusiasm, the " V " campaign is under way throughout the Montreal shops, roundhouses, and yards of the Canadian National Railways, according to a message from Montreal. There were no instructions from a local " Colonel Britton," but " V " markings and the three dot-dash Morse sign for " V " are appearing wherever men congregate in shops, in the mess rooms, at the notice boards. Most of these signs have been done in chalk, the use of which is common in all shops for marking material.

* * *

SOUTH EASTERN ENGLISH

The following curious sentence has been for years exhibited as a " Public Notice " at the Cannon Street terminus and other stations belonging to the South Eastern Railway Company: " Tickets once nipped and defaced at the barriers, and the passengers admitted to the platform will have to be delivered up to the Company in the event of the holders subsequently retiring from the platform without travelling and cannot be recognised for re-admission."—*From* " NOTES AND QUERIES," *6th Series*, ii, p. 84 (1880), *W. W. Skeat.*

It was certainly discouraging for travellers by the S.E.R. in the 1870's to know that having been admitted to the platform they would have to be delivered up to the company.

* * *

Daniel Willard, recently elected Chairman of the Baltimore & Ohio, after 31 years as its President, told a *Railway Age* staff member recently that he has been a continuous subscriber to that paper and its predecessor, *Railway Age-Gazette* and *Railroad Gazette*, since 1884. He filled out his first subscription blank while working as a brakeman on the Soo (of which he later became the Superintendent) and has been reading the weekly railroad journal ever since.—*From the " Railway Age."*

* * *

The Boston & Maine Railroad of Massachusetts has issued a novel advertisement designed to attract season ticket holders. To the many thousands of workers living along its lines who were still using their cars to drive to and from their employment in Boston, the railway suggests that the petrol used should be saved, by taking out season tickets on the company's system, and dedicated to the security of New England. It undertakes that ten per cent. of the increase in the season ticket revenue during the six months July to December will be devoted to the preparation of train units to help combat fire and bomb damage in northern New England " in the event of military activity." The Boston & Maine Railroad has already begun construction of the first of the fire-and-bomb-combatant units and will construct as many more for use at strategic points as 10 per cent. of the increased revenue from voluntary petrol savers will permit. The railway plan was worked out after its fire protection safety department had studied reports of similar successful efforts by railways in Great Britain, and after consultation with representatives of town fire department officials.

* * *

In an effort to assist in raising funds for the Jasper-Banff Spitfire Fund, six famous Canadian artists have donated original paintings which are now on display in the rotunda of Jasper Park Lodge and are attracting much attention. The artists who have given their paintings to assist this fund are Roland Gissing, Grandmaison, Peter Whyte, Carl Rungus, Belmore Brown, and Roland Jackson. All artists have done a great deal of work in the Canadian Rockies.

* * *

To build a box car for the freight services of the Canadian National Railways requires approximately 2,000 man-hours of work.

* * *

RAILWAY FLOWERS

I do not recall ever seeing a word in praise of railway flowers; not the flowers of the country station, but of the cuttings. In early spring the primroses in the south were as splendid as ever on the steep banks by the woodlands, but there were few cowslips. But in Oxfordshire, and across the Cotswolds into Gloucestershire, miles upon miles of deep golden cowslips ran by the track, glowing deeply in the cold spring air. In Bedfordshire, in June, there was a place where Canterbury bells had sown themselves for a mile or two all along a deep cutting, mauve and pink and white, and another that was plushy pink with valerian. Earlier there was another rocky cuting red and brown with wallflowers; several flaming with gorse and broom. By midsummer there were banks of wild strawberries, and everywhere snowy cascades of moondaisy. In August there will be a glory of bay willowherb, and in Scotland forests of foxglove, and just now, in Virginia, miles of golden day-lily running by the negro-shacks on the edges of the woodland.—*H. E. Bates in " Spectator."*

* * *

ON THE SPOT

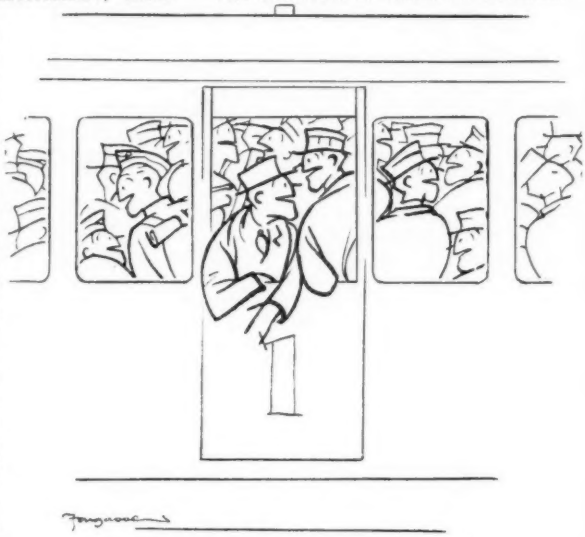
A C.P.R. special train was taking several hundred Nazi prisoners to a camp in northern Ontario. Among them was Lieut. Ottmar Hollmann, an aviator whose plane had been shot down off the Scotch coast. At 4.30 a.m. Hollmann slipped through a coach window and vanished in the darkness. Albert Sinclair, a C.P.R. yardman, saw a shadowy figure flit past the front of an engine. He followed down the yard, and met some other railwaymen.

" Some fellow's hiding around here," he said. " Maybe a Nazi got loose."

Conductor Fred Morrison, walking up to his engine, came face to face with the bareheaded flyer and asked, " Are you one of the German prisoners?" " I am," admitted Hollmann. He let the passenger conductor take him into custody, apparently mistaking Morrison for a policeman on account of the uniform. At the police station the Nazi talked freely. He had intended to steal a freight ride to Montreal, hoping to slip across the U.S. border.—*From the " Railroad Magazine."*

* * *

Funds for the purchase of an ambulance for the Canadian Red Cross Society have been raised by members of the Canadian Pacific Railway traffic department in the United States. A cheque for $1,750 has been handed over to Lt.-Colonel W. Leggat, M.C., President of the Quebec division of the Canadian Red Cross Society. The presentation was made by Mr. George Stephen, Vice-President of Traffic at Montreal.



" I hear they're talking of taking off the First Class carriages to relieve congestion."

Reproduced by permission of the proprietors of " Punch "

OVERSEAS RAILWAY AFFAIRS

(*From our special correspondents*)

BRAZIL

Autonomous Status of Central Railway

By a Decree signed by the President of the Republic and published in the *Diario Official* of May 27, the Central Railway was given autonomous status. It remains, however, under the general jurisdiction of the Ministry of Communications and Public Works, and continues to enjoy the privilege of Customs exemption on imports of fuel and materials.

CHILE

New Constructions

At the end of 1940 some 447 km. of new lines were under construction at an estimated cost of 238,400,000 pesos. They were :—

Railway	Length, km.	Estimated cost Pesos
Antofagasta-Salta	179	73,000,000
Longotoma-Los Vilos	75	40,000,000
Variante Matucana	3	16,000,000
Las Cabras-Manzano	19	7,600,000
Curacautin-Lonquimay ...	64	58,000,000
Freire-Tolten	60	30,800,000
Crucero-Puyehne	37	13,000,000
	437	238,400,000

[These are in addition to the six new lines in the southern part of the country, sanction to the building of which was announced in our issues of April 4 and 18 last—Ed., *R.G.*]

UNITED STATES

Two New Streamline Diesel Eagle Trains

The Missouri Pacific Lines administration has placed an order with the Budd Manufacturing Company and the Pullman Company for two new diesel-engined streamline trains, to be added to the existing fleet of already popular Eagles. Delivery is expected before the end of the year. Each train will consist of a mail storage car; a mail and baggage car; and a baggage-express car—all 70-ft. vehicles; a stainless steel grill-buffet car, containing a compartment for the dining car staff; a number of *de luxe* coaches with women's and men's lounges and lavatories, and a dining-lounge car, measuring 82 ft. overall. In this car is an elaborately-equipped kitchen with all the latest electric devices and conveniences, a 24-seater dining compartment occupying the central 20 ft. of the car, and a 26-ft. lounge compartment in rear.

CHOSEN (KOREA)

138-Mile New Line Opened

On April 1 the 220-km. Heijo—Genzen railway was officially opened. Construction was begun 19 years ago but was only recently finished. The new line, which runs from east to west across the neck of the peninsula, will open up an area rich in anthracite coal and virgin forest, but traverses mountainous country.

CHINA

155 Miles of Yunnan-Szechwan Railway Now Open

The latest information from Chungking states that a further section of the Yunnan-Szechwan Railway, from Chuching to Hsuanwei, is now open for traffic, so that it is already possible to travel by train from Kunming to Hsuanwei, a distance of 155 miles north-eastwards from the capital of Yunnan. Hsuanwei is mentioned as "the famous ham-producing centre in north-east Yunnan."

Hsuanwei marks the end of the comparatively easy country traversed from Kunming north-eastwards, and difficult construction again has to be faced between Hsuanwei and Weining, a distance of about 70 miles. The line onwards to Suifu—known sometimes as Iping—is reported to traverse a mountainous area rich in coal and copper deposits.

Mineral Branch in Shensi Opened

The Sienyang—Tungkwan branch of the Lung-Hai Railway, tapping a rich coal area, is stated to have been opened for traffic on December 8, 1940.

Hwainan Railway Reopened

The Hwainan Railway, in Japanese-occupied Anhwei, was reopened for traffic on December 1 last from Chunglikou on the Yangtze, opposite Wuhu, to Hofei

Nanking-Shanghai-Hangchow Traffic

As from July, two new night trains with sleeping cars attached are being run between Nanking and Shanghai. One leaves each of these cities at 11 p.m. nightly. An additional train is also being run between Shanghai and Hangchow.

CEYLON

Coal Needs of Railway

Representations have been made by the Government with the object of securing more freight in ships for bringing coal from India, particularly for the use of the railway. Actually, all coal imported for the use of the Government is now stocked by the railway which supplies the needs of the other departments. Regular supplies have not been received for some time, and reserve stocks are at present being used. About three months' supply is normally kept in reserve, and as no fresh supplies have arrived for about two months considerable concern is being felt. Apart from the use of wood fuel, considerable coal economies have been effected by the railway since the outbreak of the war.

Selection of Commercial Superintendent

About 30 candidates for the post of Commercial Superintendent of the railway were interviewed by a board composed of Mr. W. G. Hills, General Manager of Railways, Mr. L. McD. Robison, Director of Education, and Mr. M. Kanagasaby, Superintendent, Organisation and Staff of the railway; the board is to make its recommendations with regard to the candidates to the Ministry of Communications and Works. The majority of the candidates are already officers in Government service, among them being administrative officers of the railway as well as of other branches of the public service.

SOUTH AUSTRALIA

Permanent Way Improvements

During the financial year ended June 30, 1940, some 12 miles of main line in the Adelaide Division were relaid with 94-lb. rails, and about 5 miles in the Peterborough Division were relaid with 60-lb. material. On secondary lines in the former division a total of 2½ miles of curves were relaid with 80-lb. metals. On the Salisbury-Pirie section, 12½ miles of line were improved by the widening of formation and ballast widths, and the welding of the rails into long lengths. In the Tailem Bend area of the Murray Bridge Division, some 33 miles of track were ballasted, 35,000 tons of material being used. Rails in this area were also reconditioned and replaced if crippled. The track was strengthened on other divisions by increasing the numbers of sleepers and reconditioning the rails.

SWEDEN

New Malmö-Copenhagen Train Ferry

The State Railways have invited tenders for a new train ferry vessel for the Malmö—Copenhagen service. The cost is expected to be about Kr. 4,000,000. The vessel will replace the present *Malmö*, which is 40 years old and no longer answers the requirements, as it cannot take the latest heavy all-steel passenger vehicles. The new ferry will be 94·15 m. (309 ft.) long and carry two tracks with a total length of 146 m. (480 ft.). Diesel propelling machinery developing 4,500 h.p. is to be provided, and the speed will be 15 knots. In addition to the railway vehicles the vessel will have room for 1,300 passengers, or 1,800 if not carrying trains; all modern conveniences, such as air-conditioning, will be provided. If required, the vessel will be able to run on the Sassnitz—Trälleborg route, being equally suited to the berthing facilities on both routes.

[From *Nordisk Järnbanetidskrift*.]

XUM

NEW JOINT STATION AT HJØRRING IN DENMARK

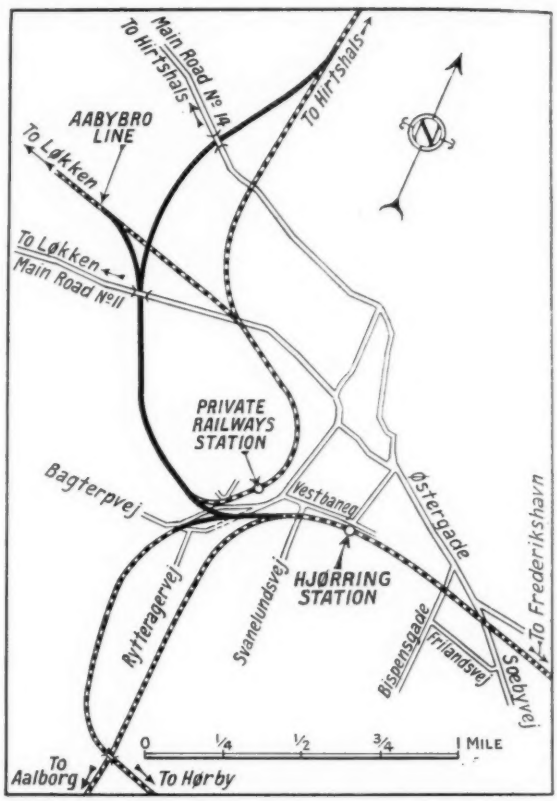
Rearrangement of railways at Hjørring to cope with increased traffic

IN 1933 the Danish and Norwegian Governments entered into an agreement to improve communications between Hirtshals, in Jutland, and southern Norway, and a cross-channel service was run daily between Kristiansand and Hirtshals. Hirtshals is connected with Hjørring, on the Frederikshavn—Aalborg section of the State Railways, by the privately-owned Hirtshals Railway. The proposal necessitated a re-arrangement of lines and an extension to the quayside at Hirtshals. It is intended eventually to ferry vehicles over by this route, but financial arrangements are not yet agreed.

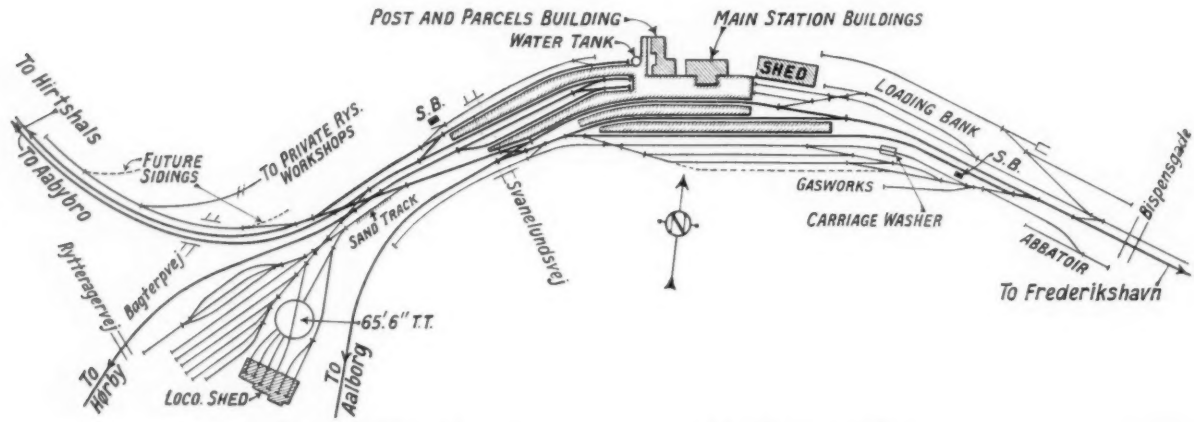
The Hirtshals Railway proposed that, as part of the scheme, its station in Hjørring should be abandoned and its trains, together with those of the Hørby and Aabybro lines, also privately owned, be dealt with at the State Railways station, suitably modified. An agreement was reached with the municipal and district authorities whereby they contributed Kr. 650,000 towards the work—with a further sum under the unemployment assistance scheme, to be determined as work proceeds, but not to exceed a million kroner—and, in return, ground space rendered vacant will be placed at their free disposal. Power to acquire new land was granted in March, 1939.

Gradients and curves

The realignments are shown on the accompanying sketch map which covers approximately 3 km. (1·86 miles) of the Hirtshals and 2 km. (1·24 miles) of the Aabybro line. These lines are laid as two parallel single tracks as far as main road No. 11. Except quite close to Hjørring station, the minimum curve radius is 550 metres (1,805 ft.) on the Aabybro and 700 metres (2,296 ft.) on the Hirtshals line. The steepest gradient is 0·5 per cent. (1 in 200). Only one bridge of any importance is required and is a reinforced concrete structure at the west end of the enlarged station, under eight tracks. One level crossing has been abolished, over the Bagterpvej, and another over the Rytteragervej has been provided with automatic warning light signals. The enlarged station is to have three through running lines and three sidings for the exclusive use of the State Railways trains, and three bay lines and two run-round lines are being laid at the west end for the companies' trains, with connections enabling State Railways trains to run to and from Hirtshals; there will also be locomotive sheds, and coal and water facilities as shown in the station layout diagram. The working is to be controlled from two signal boxes. The earthworks for the station, begun in August, 1939, are complete and work is proceeding on the bridges and other parts of the new deviations; each of the companies is carrying out its own work west of the station, and together they are laying the tracks therein to be used by them, jointly; the Danish State Railways are responsible for all other works, including signalling and the installation of other new equipment.



Lines approaching Hjørring, showing old private railways station and new lines (black) to eliminate its use



Layout of Hjørring station as re-arranged, Danish State Railways

SIGNALLING ON THE ASSAM-BENGAL RAILWAY*

Double-wire operation, and a three-aspect system economising in signals required at crossing stations

By E. W. BAKER, Signal Engineer, A.-B.R.

THE Assam-Bengal Railway is a metre-gauge line, of 1,306 route-miles, running from Chittagong, on the Bay of Bengal, to Tinsukia, in Northern Assam, with two main cross-country connections to the metre-gauge section of the Eastern Bengal Railway. Until 1928 it had practically no interlocked signals or signal staff, but before the appointment in that year of the writer as Signal Engineer, it had ordered equipment for five crossing stations, with the complement of signals required by the Indian Standard III arrangement, namely, combined outer and warner, bracket type home and advanced starting in each direction, with separate starting signals for main and loop lines, making 14 in all. The General Manager, Mr. G. E. Cuffe—now General Manager of the G.I.P.R.—had specified that centralised working was to be used and not one of the divided methods then common in India. To his foresight in doing so, much of the subsequent development has been due. The distances involved (400 to 500 yd.) exceeded the permissible limits for rod working of points and as electric operation was too expensive, double-wire working was decided on.

The First Double-Wire Installations

As originally supplied the crossover, or loop outlet, points, and the 42-ft. locking bar and f.p.l. at each end, were all operated from a single lever, but the load was found to be too heavy. This was overcome by operating each end on a separate lever, but it proved comparatively easy to force one lever home with an obstruction in the points. Detection of the plunger lock was provided, so that main running movements were more or less adequately protected, but a good deal of shunting had to be done and switch-and-lock (economical) movements were not considered advisable under such conditions. The two pairs of points were then experimentally coupled to one lever and the f.p.l. plungers to another, making the full wire stroke of 18 in. available for a single purpose. This was found to be satisfactory, and by the middle of 1930 all five stations were working.

Experience during the next 18 months showed the new method to be sound in principle, but certain apparatus needed re-designing. An inspection of various installations in Continental countries led to the decision to adopt the spring clutch type of lever, not used in the first sets of equipment, and this proved to afford a satisfactory solution of the forced lever difficulty. Cam plate actuating mechanisms were employed.

The Government Attitude

Although four years' experience convinced the railway company that the double-wire system fulfilled the requirements of centralised operation efficiently and inexpensively, the Government of India was not yet satisfied and, at the railway company's wish, the four senior signal engineers in the country were appointed to report on its installations, but their terms of reference did not, unfortunately, include the request of the railway "to draft suitable rules for the use of this system." In their report, which the railway company challenged, they rejected the spring clutch lever as inadequately meeting the difficulty of forcing, and held that double-wire operation was suited only to unimportant lines where speeds were low.

A second committee, composed of the company's Signal Engineer and Chief Operating Superintendent, the Senior Government Inspector, and the Chairman of the Indian Signal Standards Committee, after a month's work, unanimously recommended that such operation should be permitted on high-speed lines and endorsed, with a few amendments, the rules proposed by the writer; it accepted the clutch type lever as adequate. Three years elapsed, however, before instructions were issued permitting general use of double wire operation.

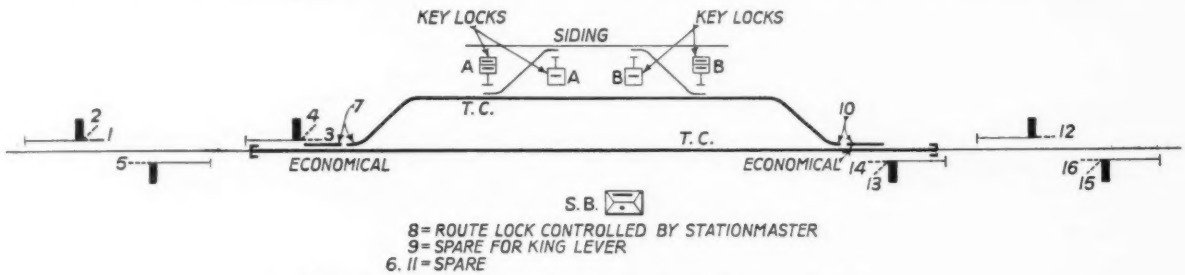


Fig. 1—Signalling as used on Southern Section, A.-B.R.

Simplified Signalling

In 1933-1934 the railway company submitted proposals for radically simplifying crossing loop signalling, proposing to use one 3-aspect outer signal and one 2-aspect (0° to 90°) starting signal in each direction, the latter in advance of the loop points, all fitted with train stops, or four signals instead of fourteen; proposals for unattended loops were also put forward. None of these was accepted, but the Government agreed to the modification shown in Fig. 1, an experimental station being brought into service in 1936, followed a year later by an installation at a small junction. Sanction was then obtained for 16 crossing stations and three junctions; the former were completed in 1938.

Track Circuits replace Isolation

Indian rules prescribe that no train may run through a station on the main line at more than 30 m.p.h. unless all other lines are isolated by dead ends or derailing points, irrespective of the condition, occupied or clear, of such lines. At only about one station in five on the Assam-Bengal Railway do express trains require to pass another train without stopping. The company therefore proposed to comply with the intent of the rule by restricting the speed unless the loop line was proved clear by track circuiting; this has been tentatively permitted.

Adoption of Distant Signals on Northern Section

The fact that the first signal in Fig. 1 is a stop signal (as it is in the Indian "B" class working) creates no serious difficulty where visibility is good. On the northern section of the line, however, forest and hills restrict visibility to as little as 600 ft. in places, and there is light, patchy fog during four

* Based on a paper read before the Signal Section of the Association of American Railroads at Washington, October, 1940

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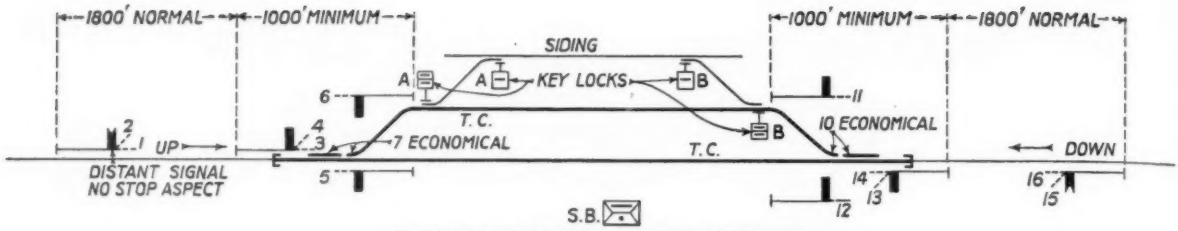


Fig. 2—Signalling as used on Northern Section, A.-B.R.

months of the year. Sanction was requested to use a 3-aspect distant signal (normal indication, "caution") 2,000 ft. in rear of the home signal, the latter being 800 ft. from the opposing starting signal, providing an overlap, but the proposals were at first rejected. The principal objection raised was that Indian rules required two stop signals at crossing stations. Since shunting to within 440 yd. of the outer signal is permitted only one signal is effective under such conditions. The railway contended that by providing 2,000 ft. between distant and home signal plus 800 ft. overlap, a higher standard of safety was afforded, since—excluding sighting distance—there was now a space of 2,800 ft. between the first signal and an obstruction, against 1,320 ft. with the older practice. Sanction was eventually obtained to use the new system of aspects on a 210-mile section, subject to the following conditions :—

(a) Tests to be carried out to confirm that braking distance from 50 m.p.h. for passenger trains was within the stated 1,600 ft. ;
(b) Distance between distant and home to be not less than 1,600 ft., or longer if the tests showed it to be necessary ;
(c) Distance between home and opposing starting signal to be not less than 1,000 ft.
(d) Warning approach marker board to be provided in rear of the distant ;
(e) Suitable operating rules to be submitted.

An extensive series of braking tests with passenger, mixed, and goods trains was made at speeds up to 60 m.p.h., including wet rails and gradients. Passenger trains of 18 bogies, weighing 430 tons, could be stopped from 50 m.p.h. by service application well within 1,600 ft. Although 45 m.p.h. was then the maximum, signals were ordered to be spaced for an ultimate maximum of 60 m.p.h. with a 350-ton passenger train. Tests with one at 58 to 59 m.p.h. gave braking distances of 1,735 ft., 1,753 ft., and 1,738 ft. The one emergency stop made, with a 240-ton train at 54 m.p.h., gave 1,123 ft., or a deceleration of approximately 2 m.p.h. per second, compared with 1·7 for a service application. Braking distance for mixed and goods trains of 800 to 900 tons at 40 m.p.h. was within 1,800 ft. There appears no likelihood of a higher speed being required for them, so that 1,800 ft. was taken as the distance for all trains, to be increased as required by gradients or visibility conditions.

The Northern Section Signalling

The signalling adopted for the northern section is illustrated in Fig. 2. The central signal box has a brick lower storey, the top one being enclosed only up to 3 ft. from floor level. A deep, overhanging asbestos sheet roof gives adequate protection with good ventilation. There are 14 levers, space 8 being occupied by the electric route lock and handle, and space 9 left free for a similar lock, to give switching out facilities later, for which all the mechanical locking is already installed, with two brackets for the key locks used for the siding. The up distant signal—with fishtailed 3-position arm (see Fig 3 for list of aspects) is operated from 0° to 45° by lever 2, reversal of lever 1 in addition completing the movement of the arm to 90° by imparting a second 24-in. stroke to the wires. The up home signal is operated by two levers, 3 and 4, one moving the arm from 0° to 45°, detecting the loop facing points normal or reversed, the other moving the arm from 0° to 90° and detecting the points normal only. In this case the two levers drive the wires in opposite directions. Starting signals 11 and 12, 0° to 90° only, are worked on a similar principle. (Down signals are of the same construction.) The loop points are economical, one lever operating them and the f.p.l. and bar. The position of each tongue and the plunger lock is detected by three slides, the notches in which must coincide with the wire drums of the detectors in the home signal transmission.

The track-circuit and route locking control, the circuits for which are given in Fig. 4, together with the stationmaster's control, are all combined in an electric route lock on the lever frame (space No. 8) and a controller in the station office. Both have four positions, namely : (1) "normal," points free but all signals locked ; (2) "loop," points locked for loop line and appropriate signals released ; (3) "main," points locked for main line and corresponding signals released ; and (4) "through," points locked for main line. Proving both loop and main lines clear releases 90° aspect of all signals concerned.

Method of Operation

The stationmaster instructs a porter to go to the lever frame and set the points as required, then turns his route controller to correspond with the route wanted, pressing a plunger to

NAME OF ASPECT	ASPECT			INDICATION
	DISTANT SIGNAL	STOP SIGNAL	COL² LIGHT OR NIGHT ASPECT	
DANGER		WHITE BAR RED ARM.	(R)	STOP & STAY
CAUTION	BLACK BAR YELLOW ARM		(Y)	PROCEED WITH CAUTION AND BE PREPARED TO STOP AT NEXT SIGNAL
ATTENTION			(Y) (Y)	PROCEED & PASS NEXT SIGNAL AT RESTRICTED SPEED
CLEAR			(G)	PROCEED AT NORMAL SPEED

NAME OF ASPECT	ASPECT			INDICATION
	SEMAPHORE SIGNAL DAY	SEMAPHORE SIGNAL NIGHT	POSITION LIGHT SIGNAL	
DANGER	WHITE DISC RED BAND	(R)	(W) (W)	STOP & STAY
SLOW	WHITE DISC RED BAND	(Y)	(W) (W)	PROCEED SLOWLY PREPARED TO STOP SHORT OF ANY OBSTRUCTION
SUBSIDARY SIGNAL BELOW STOP SIGNAL				
DANGER		(R) (NO LIGHTS)	(R) (NO LIGHTS)	STOP & STAY
SLOW		(R) (Y)	(R) (W) (W)	PROCEED SLOWLY PREPARED TO STOP SHORT OF ANY OBSTRUCTION

R = RED LIGHT. Y = YELLOW LIGHT. G = GREEN LIGHT. W = WHITE LIGHT.

Fig. 3—Standard signal aspects, A.-B.R.

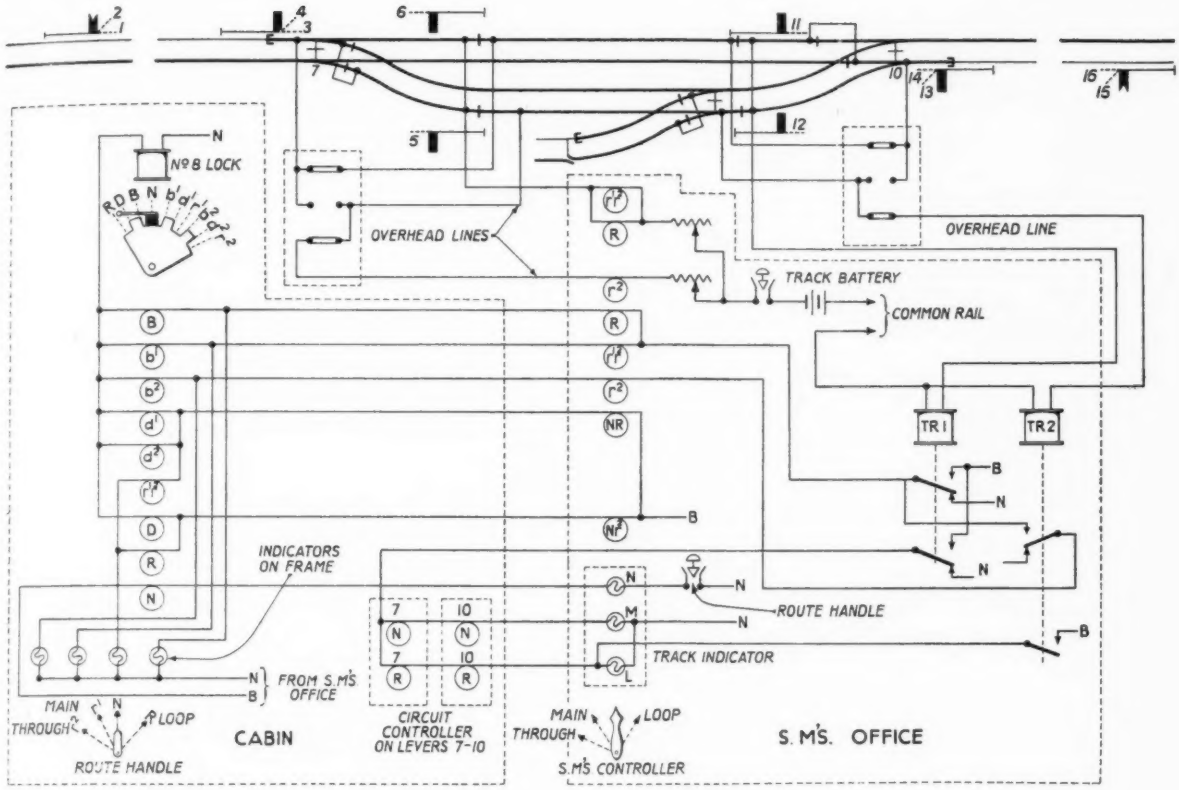


Fig. 4—Track and route locking circuits for station on Northern Section

energise the track circuits. If everything is correct this brings up a corresponding indication at the route lock on the frame, enabling its handle to be turned to the position indicated, locking the points and releasing the signals. Signal levers can be replaced at any time, and reversed again thereafter, but those for the opposite direction remain locked until the route lock has been replaced to normal and again operated. Point levers remain locked until the route lock has been restored to normal, which cannot be done until the stationmaster similarly restores his controller. By pressing a second plunger that official can see, by the indicators provided, the positions of the point levers and the route lock. Only two track relays are required.

The Signal Aspects

The company's multiple-aspect signal indications are shown in the diagram, Fig. 3.

The signal indications for a roadside station are used as follow :—

Train movement	Distant	Home	Starting
Stop at home signal	Caution	Stop...	Stop
Stop in loop	Attention	Caution	Stop
Stop on main line	Clear	Caution	Stop
Run through	Clear	Clear	Clear
Run through at restricted speed (loop occupied)	Clear	Caution	Clear

A clear aspect is never displayed at a distant or home signal unless the straight route is set, and never at a home signal if the through run is to be made at restricted speed.

Other Installations : Staff Questions

This system of signalling has been applied to a small junction station, with a 36-lever frame. The track-circuits are continuously, not intermittently, energised. The points are operated by a combined movement, including plunger lock and electric track lock all in one case, very similar in appearance to an electric point machine. There are no lock bars. There is an illuminated diagram in the signal box and a route lock, operated slightly differently from the one described above. The stationmaster's controller has three selector switches, for "up main," "down main," and "branch line." He operates the one concerned, say the up main switch, to the position corresponding with the line concerned, say the loop line, which causes an indicator to show on the track diagram. After he has set the required route the signalman can move his route lock to the "receive" position, releasing his signal levers. When dispatching a train, the controller and route lock have to be moved to the "dispatch" position. When the route lock is operated the circuits of all track locks on the route and adjacent lines—normally controlled by adjacent track circuits only—are opened, holding the route from the home signal to the platform track; the route is released by the stationmaster, as in the other cases. These installations provide centralised operation with almost all the safety features of power interlocking, at considerably lower cost.

There are three all-electric power interlockings on the line, with colour-light running signals and position light subsidiaries. When points isolating goods lines from running lines are normal, the pressing of a plunger over the lever of the outlet subsidiary extinguishes the stop aspect and lights a double sided "F" indication ("free to shunt") and any sorting or marshalling can then proceed under hand signals without continuous passing of a stop aspect.

When in 1928, a beginning was made upon the work described, a staff had to be trained, and about a dozen Indian signal apprentices were recruited, all literate in English; half of them had had technical training. A few were lost in the first few months, but the others persevered and after from four to six years training—others being taken on each year—the nucleus of a well-trained staff was obtained; 95 per cent. of the signal staff have been trained on the line and are maintaining every type of signalling, telegraphs, telephones, clocks and weighing machines. Much credit is due in this connection to the Assistant Signal Engineer, Mr. H. F. Dennison, and Chief Inspector Hiscutt.

XUM

RECENT PROGRESS IN RAIL FISSURE DETECTION

Sperry detector cars have now been in service for ten years on North American railways, and have been responsible for the removal from the track of 500 miles of rails containing fissures, as well as the detection of various other types of defect in 600 miles of rails

A PAPER read recently by Mr. C. W. Gennet, Junr., Vice-President of Sperry Rail Service, before the Western Society of Engineers at Chicago, on the development of the Sperry method of detecting transverse fissures in rails, was of interest in the details that it gave of each successive improvement in the detection apparatus, chiefly in order to distinguish more accurately between the different types of defect detected, and so to give a precise indication of the defects that are really dangerous. The necessity for such distinction is evident when it is mentioned that in the records made by the Sperry detector cars during the past five years, only 40 per cent. of the defects detected were transverse or compound fissures, another 40 per cent. having vertical split heads, 15 per cent. horizontal split heads, and 5 per cent. other miscellaneous defects. The bulk of the 60 per cent. last referred to are defects arising from faulty methods of manufacture (mainly primary or secondary piping in ingots), which cannot be cured, as fissuring can be cured, by means of controlled cooling of the rails. On the other hand, such defects are not so dangerous as the fissure, for they usually give external evidence of their presence well before the imminence of failure by spreading of the rail-heads, or discoloration along the running surface, whereas the transverse fissure is entirely concealed from view until failure occurs.

Although Sperry detection has been in operation for only a little over ten years, already the Sperry fleet of cars has tested more than 600,000 track miles, and 14 of the cars are now in service. As these cars are continually under contract to the railway companies, the difficulty of trying out experimental improvements of the equipment is considerable; unless such modifications have a known and proved value, they might impair the efficiency of the testing. Occasionally a car has been taken out of testing for the purpose of conducting a special test on some new device.

Improving the Searching Unit

The most important part of the equipment is the searching unit, which carries the electric induction coils. Originally this was an integral part of the brush frame, but slight unevenness in the running surface of the rails, such as that caused by corrugation or battered ends, made it desirable to substitute a searching unit carried loosely in an independent mounting, suspended from the frame, and riding over the rail surface on small diameter wheels. This arrangement ensures a practically constant gap between the coils and the rail, and reduces considerably the number of false indications.

Next, in order to cover efficiently a greater area of the rail-head, the original two-coil detectors were replaced by four-coil searching units, with the coils staggered instead of being in line, an arrangement which specially helped in the detection of certain types of fissure. From the earliest days of testing it was noticed that if the car were run over the same length of track twice in immediate succession, certain transverse fissures gave stronger indications on the second run than on the first. This suggested that benefit was to be derived from the double passage of the magnetic flux through the rail, and as the fruit of this experience, the rails are now pre-energised by two complete and distinct circuits through the car, one slightly in advance of the other, so that two magnetic fields are set up, with the searching unit in the rear field. This development was expensive, as it necessitated re-designing the cars, and providing them with additional generators to energise the extra brushes, but it has justified itself by adding from 25 to 50 per cent. to the number of fissures detected.

Further modifications have concerned the splash of paint dropped by the car on to the foot of the rail at each point where a defect is located, and have resulted in more accurate indications being given—an important point, as it reduces the time spent in making the hand detection tests on each affected rail to determine whether or not it is so badly fissured as to require immediate removal from the track.

Distinguishing Different Types of Defect

With the earlier methods of detection, the searching units were equally sensitive to a number of different types of defect, and particularly to burns on the rail-head caused by the slipping or skidding of engine driving wheels. There was a tendency on the part of detector car operators, on seeing these wheel-burns at the points where defects were indicated on the detector tape, and marked by paint splashes on the affected rails, to overlook the fact that fissures and wheel-burns might be present in the same rail. One serious derailment of a freight train, causing nearly $100,000 of damage and completely blocking a double track main line for 24 hr., occurred owing to the breakage of a rail, through two transverse fissures of large size, which had been tested only four months previously; subsequent examination showed that both fissures had been recorded on the tape, but as there were wheel-burns at the same points, the operator had attributed the indications to the latter, and had not proceeded to hand-detection of the affected spots.

As a result of this and other similar experiences, searching units of a new and intricate construction, known as Type 80, with newly designed amplifiers and small additional auxiliary generators, have been installed on each car. These operate three recording pens, instead of the original single pen; one of the three is insensitive to wheel-burns and other skin defects, but not to fissures, which may also be recorded by either or both of the other two pens. The car operator is thus obliged to stop the car and conduct hand-detection on many rails which otherwise might have been passed over.

This latest development has also proved of the greatest value in detecting flaws which under the influence of traffic penetrate rail-heads in a transverse direction from such external defects as wheel-burns, and at times develop into external fissures as dangerous in their effect as the internal variety. Various other minor modifications of the apparatus have been made in order to increase the accuracy and efficiency of the testing.

In 1930 an average of one fissured rail was detected by Sperry cars every 12 miles of track tested; by 1935 the rate had increased to one in every 5½ miles. While faster and heavier traffic over the railways is in part responsible, there is no doubt that the introduction of multiple-coil sleds and the amplified pre-energising equipment have been the main factors in this increase, and the new Type 80 equipment will further increase the sensitivity of the detection.

There are remarkable variations in the length of time taken by fissures to develop from a shattered condition of the steel in the heads of rails. A certain stretch of track in the U.S.A. was first tested in 1931 after it had carried roughly 23,000,000 tons of traffic, and 14 fissured rails were found. Since then 29 tests have been made at intervals during the ensuing 9 years, and 669 fissures have been detected, or an average of 23 per test. At the last test 12 fissures were located which had taken 71,000,000 tons of traffic before they had increased to a dangerous size, and four of these fissures were in rails from two casts of steel which had shown no previous fissuring tendency.

Provided that shattering is initially present in the rails,

there are various external conditions that may accelerate fissure development, such as poor track maintenance, locomotives imposing excessive hammer-blow on the rails, flats on wheels, heavy axle-loading, and high speed. So lacking in uniformity have been the data recorded by the detector cars, in relation to the composition of the steel, method of manufacture, weight of traffic carried by the rails, and other variables, that it has been impossible to evolve any formulæ to decide where fissures are to be expected, how rapidly they will grow, and so on. The plain facts are that fissures have occurred in all kinds of steel laid in every possible condition, and that there is no immunity from fissuring apart from the safeguard of controlled cooling now standard. But with the millions of rails laid in American tracks before the introduction of controlling cooling, it is obvious that the business of fissure detection must go on in America for an indefinite number of years to come.

500 Miles of Fissured Rails

Up to the present time the Sperry cars, in just over ten years, have been responsible for the removal from American tracks of nearly 500 miles of rails containing transverse or compound fissures, and for the detection of 600 miles of rails containing defects of other kinds. The latter may not be as dangerous as the former, but if controlled cooling succeeds in eliminating fissures, it is clear that plenty still remains to be done by rolling mills in improving the quality of rails, as many of the defects comprised in the miscellaneous 600 miles will necessitate premature removal of the affected rails from the track. In a very few instances defects resembling fissures have been found in rails which have been subjected to controlled cooling in boxes, or the Brunorising treatment, but these are merely regarded as the exceptions likely to be met with in the pioneering of a new process.

The greatest dangers with fissured rails lie in the fact that a single rail may contain more than one fissure; to date, 15 per cent. of the rails tested have been so affected, some rails containing from 10 to 50 fissures, and it was discovered that in one 39-ft. rail no fewer than 135 separate fissures were present. In multiple-fissured rails the risk is that a piece may break clean out of a rail between adjacent sleepers, with almost certain derailment as the result, unless the failure has been forestalled by the detector car.

The fact that on certain lines which have been using Sperry detection at regular intervals, say annually, failures of rails have occurred between the visits of the detector car, has suggested the advisability of more frequent testing; in this connection it should be remembered, of course, that many rails are found broken from time to time in American lines as a result of fissures in addition to those of which failure has been anticipated by detection, and which have been removed from the track in time. The extremely cold winter conditions over large areas of North America, which help to accelerate fissure development, have created a widespread desire for the use of the Sperry cars in the late summer and autumn; this, however, it has proved difficult to satisfy owing to the limited number of cars available, and the necessity for utilising them and their trained staffs as equally as possible over the entire year. Editorial comment on the problems presented by rail fissures and their relation to rail experience in Great Britain, is offered in a note on page 207.

A Palatial Far-Eastern Station

Photo by courtesy of [*Malayan Information Agency*

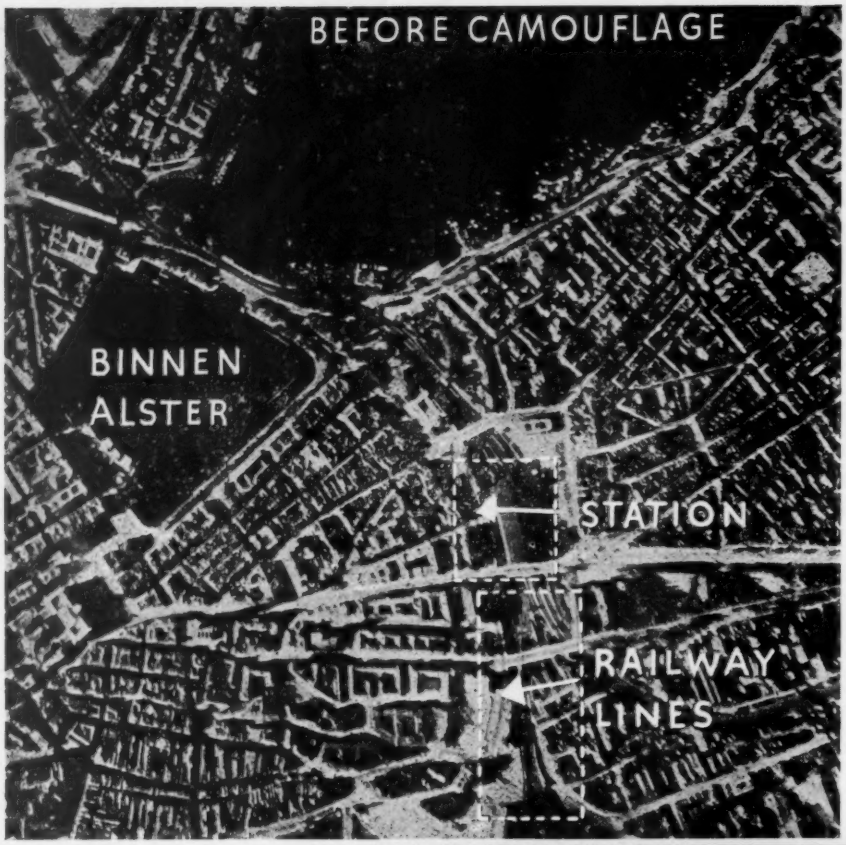
This fine entrance and booking hall is part of the modern station building at Singapore (Tanjong Pagar), opened on May 2, 1932. Other views and a description of the station appeared in our issue of November 18, 1932

XUM

Railways and the War—82

R.A.F. attacks on Germany, particularly on its communications, have led to steps being taken to camouflage important objectives. At Hamburg, which has figured consistently in British Air Ministry communiques, the important dockland area has been frequently attacked. The German authorities have now camouflaged the Binnen Alster Lake, the inner of the two pleasure lakes in Hamburg, and the main railway station. These two lakes are away from the dock area

Left: the area before camouflage



Right: After camouflage. A facsimile of the Lombardsbrücke and the Aussen Alster has been constructed north of the original bridge, which is the link between two main Hamburg marshalling yards. The Binnen Alster has been covered to represent a built-up area. Hamburg station has light-toned "roads" painted across the top; the railway lines have been similarly treated

RAILWAY NEWS SECTION

PERSONAL

The King, on August 7, conferred, at Buckingham Palace, the honour of Knighthood upon Mr. Frederick George Binney, Export Manager, United Steel Companies Limited, seconded for service with the Iron & Steel Control, Ministry of Supply.

Colonel Sir Joseph Nall, D.S.O., T.D., has been appointed a Deputy Lieutenant for the County of Nottingham.

The Secretary of State for the Colonies has recently approved the following appointments :—

Mr. A. F. W. Harris, European Guard, to be Traffic Inspector, Nigerian Railway.

Mr. W. C. Bamford, Section Engineer, Grade III, to be Section Engineer, Grade II, Nigerian Railway.

Mr. N. M. Lewis, Section Engineer, Grade III, to be Section Engineer, Grade I, Nigerian Railway.

Mr. W. H. Norris, Section Engineer, Grade III, to be Section Engineer, Grade II, Nigerian Railway.

Mr. C. B. Watson, Section Engineer, Grade III, to be Section Engineer, Grade II, Nigerian Railway.

The Crown Agents for the Colonies have recently made the following appointment :—

Mr. E. T. Williams, to be Assistant Engineer, Federated Malay States Railways.

Sir Ernest Lemon, Vice-President (Commercial & Operating), London Midland & Scottish Railway, has been appointed President of Associated British & Irish Railways Inc.

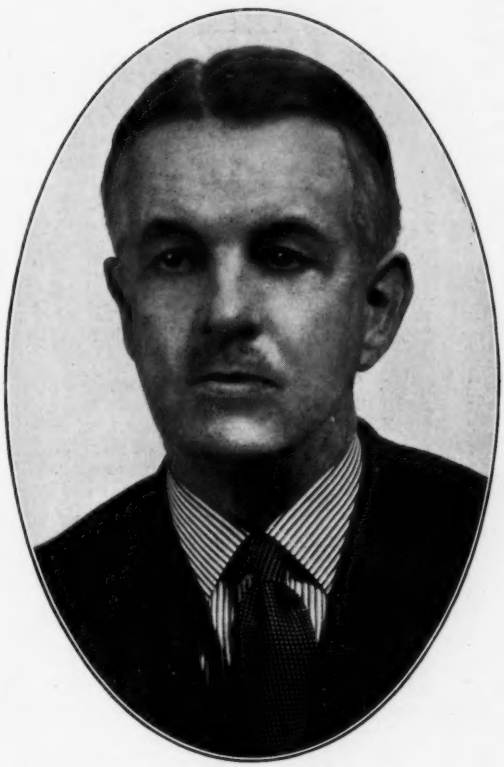
Mr. R. M. Holland-Martin, Chairman, London board of Martins Bank, has been appointed a Deputy Chairman of the bank in succession to the late Mr. G. E. B. Bromley-Martin. Mr. Holland-Martin is Chairman of the Southern Railway Company.

We regret to record the death through an aircraft accident on August 14 of Mr. Arthur Blaikie Purvis, P.C., head of the British Purchasing Commission in the United States.

Sir Richard D. Holt, whose death we recorded in our April 4 issue, has left estate valued at £104,228 (net £75,809). Sir Richard was Chairman of the Mersey Docks & Harbour Board and head of Alfred Holt & Co.

Mr. Christopher Horsley Whitelegge, Solicitor & Parliamentary Agent, Great Western Railway, whose death we recorded in our August 22 issue, was the elder son of the late Sir Arthur Whitelegge, K.C.B., and a grand-nephew of Isambard Kingdom Brunel. Mr. Whitelegge, who was 55 years of age, was educated at Charterhouse and on the Continent and, after some legal experience in the City of London, joined the Great Western Railway service in July, 1913. He was an LL.B. of London University with first class honours, and obtained second class honours in the Law Society's examinations. During the last war he served from June, 1915, to February, 1918, in France, mainly with the 18th Division. He rejoined the G.W.R. Solicitor's Office in 1919, was appointed Parliamentary & General Assistant in 1931, and Parliamentary Agent in 1935. In September, 1937, he became Assistant Solicitor, and Deputy Solicitor in March, 1940. In July, 1940, Mr. Whitelegge was appointed Solicitor & Parliamentary Agent.

The funeral service was held on August 22 at Aldermaston Church. A list of those present is given on the next page.



The late Mr. C. H. Whitelegge
Solicitor and Parliamentary Agent, G.W.R., 1940-1941

The first Marquess of Willingdon, whose death on August 12, at the age of 75, we regret to record, had some connection with railways before beginning his great public career as successively Governor of Bombay, Governor of Madras, Governor-General of Canada, and Viceroy of India. He was elected a director of the London, Brighton & South Coast Railway Company in August, 1907, and resigned his seat on the board in April, 1913, in consequence of his appointment as Governor of Bombay. His last great work on behalf of his country was his successful economic mission to South America which he headed in November, 1939.

Indian Railway Inspectorate

The following is an extract from *The Gazette of India* of May 24, 1941 :—

Department of Communications
Simla, May 22, 1941

Mr. H. G. Salmond is appointed Chief Government Inspector of Railways from May 12, 1941.

The following officers are appointed Government Inspectors of Railways in charge of the circle noted against each, with effect from May 12, 1941 :—

Lt.-Col. H. H. E. Gosset, M.C., R.E., Circle No. 1, Calcutta.

Lt.-Col. R. E. Gordon, M.C., R.E. (at present on military duty.) Circle No. 5, Bombay.

Mr. K. B. Lal Mathur. Circle No. 4, Lahore.

Mr. G. W. Scriven. Circle No. 3, Bangalore.

Mr. Dev Datt. Circle No. 2, Calcutta.

In addition, these appointments are notified :—

Mr. K. B. Lal Mathur is appointed to officiate as Government Inspector of Railways, Circle No. 5, Bombay, with effect from May 12, 1941, *vice* Lt.-Col. R. E. Gordon, M.C., R.E., recalled to military duty.

Mr. R. W. Wilton Davis is appointed to officiate as Government Inspector of Railways, Circle No. 4, Lahore, with effect from May 12, 1941, *vice* Mr. K. B. Lal Mathur.

The officers mentioned in these notifications were all previously under the Railway Department, and this is the first intimation received that the change foreshadowed on page 687 in our issue of May 10, 1940, has actually taken place. The Government Inspectorate of Railways, therefore, became a branch of the Department of Communications as from May 12, and ceased to be directly controlled by the Railway Department (Railway Board).

XUM

The reorganisation was also dealt with editorially on page 662 in that same issue.

L.M.S.R. Staff Appointments

Mr. J. Elliott, District Engineer, Abergavenny, to be District Engineer, Barrow-in-Furness, *vice* Mr. T. D. Mason, retiring.

Mr. I. R. Frazer, District Engineer, Inverness, to be District Engineer, Perth, *vice* Mr. H. Riach, deceased.

Mr. A. McIntosh, Assistant, Maintenance of Way & Works, Divisional Engineer's Office, Glasgow, to be District Engineer, Inverness.

Mr. W. Bryson, Assistant (Signals), Signal & Telegraph Engineer's Department, Glasgow, to be Divisional Signal & Telegraph Engineer, Glasgow, *vice* Mr. H. W. Moore, retiring.

Mr. F. Grundy, Goods Agent, Bury, to be Assistant to District Goods Manager, Bolton, *vice* Mr. F. Gilman, deceased.

Mr. T. J. Knibbs, Chief Claims Clerk, District Goods Manager's Office, Bolton, to be Goods Agent, Bury, *vice* Mr. F. Grundy, promoted.

Mr. F. Moxon, Goods Agent, Sheffield (Queen's Road), to be Goods Agent, Nottingham, *vice* Mr. H. Bassett, promoted.

Mr. J. J. Whalley, Stationmaster & Goods Agent, Bacup, to be Passenger Agent, Bolton, *vice* Mr. W. M. Ashall, retired.

Chief Mechanical Engineer's Dept.

Mr. E. Pugson, to be Principal Assistant to C.M.E. for Carriage & Wagon Works, *vice* Mr. J. Purves who is retiring.

Mr. C. W. Foxley, to be Works Superintendent (C. & W.), Derby, *vice* Mr. Pugson.

Mr. J. E. Bagguley, to be Assistant Works Superintendent, Crewe.

Mr. T. A. O'Neill, to be Assistant to Works Superintendent (Planning & General), Crewe.

Mr. E. J. Larkin, to be Assistant Works Superintendent (Locomotive), Derby.

Mr. Horace Shankland, Vice-President, Society of Motor Manufacturers & Traders, has been elected President in place of Mr. W. E. Rootes, who, as recorded in our July 11 issue, has been appointed to the Ministry of Supply as deputy to Lord Beaverbrook. Mr. Shankland is Director of the National Service Division of the Dunlop Rubber Co. Ltd. This department provides a specialised form of tyre equipment service to Government authorities and to transport formations.

We regret to record the death on August 7 of Mr. Arthur Chamberlain. Mr. Chamberlain was a Director of the General Electric Co. Ltd., Stewarts and Lloyds Limited, Tubes Limited, and the Iron Trades Employers' Insurance Association, a Member of the Board of Governors of the Midland Bank Limited, as well as of various other companies.

Mr. F. G. Smith, President of the Motor Agents' Association, is to join the Ministry of War Transport as honorary adviser on vehicle repairs.

Mr. J. E. S. Bodger, Engineer, Way and Works Department, has been appointed to act as General Manager of the Ceylon Government Railway in addition to his own duties, as Mr. W. G. Hills, General Manager, is ill and is not likely to attend office for some time.

Mr. H. Mills, acting Operating Superintendent, who has also been away owing to illness, is expected to resume work soon.

We regret to record the death on July 31 of Mr. Frederick Ernest Welch, a partner in Messrs. Price, Waterhouse & Co.

Mr. Claude J. Brown, General Manager, Chicago, Rock Island & Pacific Railway, has retired.

Mr. Thomas E. Murray, Chief Accountant of the Dublin United Transport Co. Ltd. for the last 20 years, has retired.

We regret to record the death on June 21 of Mr. Harry Alfred Lane, Chief Engineer, Baltimore & Ohio Railroad.

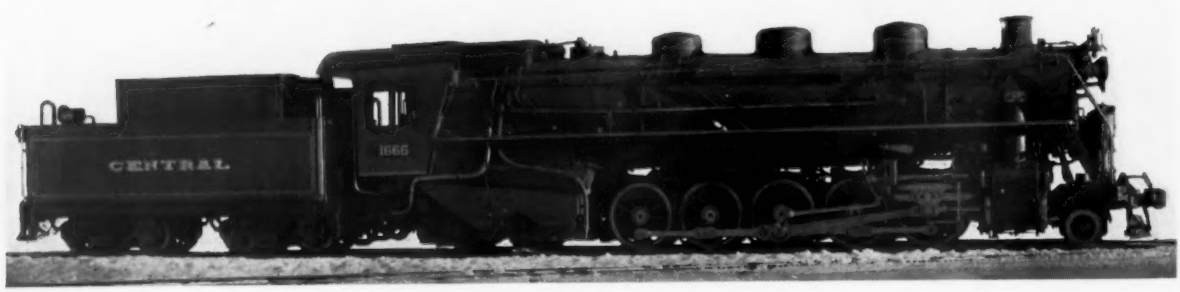
Funeral Service of Mr. Whitelegge

The funeral service of Mr. C. H. Whitelegge, Solicitor & Parliamentary Agent, G.W.R., was held at Aldermaston Church on Friday, August 22. In addition to relatives and other mourners those present included :—

Great Western Railway : Sir Charles J. Hambro, Chairman ; The Rt. Hon. Lord Palmer, Deputy Chairman ; Mr. K. W. C. Grand, Principal Assistant to General Manager, also representing Sir James Milne ; Mr. F. R. E. Davis, Secretary ; Mr. A. S. Quartermaine, Chief Engineer ; Mr. F. C. A. Coventry, Superintendent of Road Transport ; Mr. W. H. E. Humphrey, Assistant Superintendent of Road Transport ; Mr. H. H. Cavendish Fuller, Chief Medical Officer ; Mr. H. Adams Clarke, Chief Staff & Establishment Officer ; Mr. F. C. Hockridge, Deputy Surveyor & Estate Agent ; Mr. G. E. Orton, Commercial Assistant to Superintendent of the Line ; Mr. H. E. Hedges, Assistant to General Manager ; Messrs. P. W. Pine, A. W. Warren, G. W. Willson, A. Boulter, R. P. Ploughman, Assistant Solicitors ; Mr. A. J. Southcomb, Chief Clerk, Solicitor's Department ; Miss Nicholls ; Miss Mudie.

Representatives of the Legal Departments of other railways included : Mr. A. Eddy, Chief Legal Adviser & Solicitor, L.M.S.R. ; Mr. H. L. Smedley, Solicitor, Southern Railway ; Mr. W. H. Hanscombe, Chief Assistant Solicitor, L.N.E.R., and Mr. C. G. Page, Secretary & Chief Legal Adviser, London Passenger Transport Board.

Others attending the service included : Mr. R. Carpmael, former Chief Engineer, G.W.R. ; Mr. J. A. Kay, Editor, The Railway Gazette.



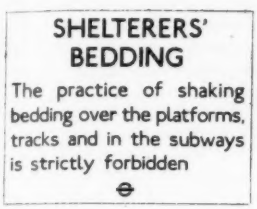
Cylinders (2), diam.	... ...	20 in.	
,, stroke	... ...	24 in.	
Wheels, coupled, diam.	... ...	4 ft. 0½ in.	
Wheelbase, rigid	... ...	17 ft. 4 in.	
,, total (engine)	... ...	37 ft. 0 in.	
Evaporative heating surface—			
Tubes and flues	... ...	2,010 sq. ft.	
Firebox	... ...	240 sq. ft.	
Total	... ...	2,250 sq. ft.	
Superheating surface	... ...	896 sq. ft.	
Firegrate area	... ...	70·3 sq. ft.	
Boiler pressure, per sq. in.	...	243 lb.	
Tractive effort	... ...	41,100 lb.	
Factor of adhesion	... ...	4·02	
Adhesion weight	... ...	73 tons 13 cwt.	
Total weight (engine)	... ...	105 tons 16 cwt.	
,, ,, (tender)	... ...	51 tons 14 cwt.	
Total (engine and tender)	... ...	157 tons 10 cwt.	
Water capacity	... ...	4,755 gal.	
Fuel capacity (coal)	... ...	11 tons	

One of several powerful metre-gauge locomotives built by the American Locomotive Company for the Central Railway of Brazil in 1940

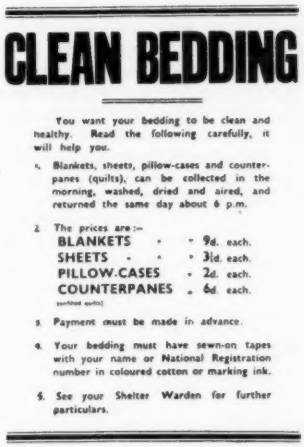
TRANSPORT SERVICES AND THE WAR—104

Tube station shelterers—Inland water transport in Central Europe and Russia—German railways—Transport in Holland—Reconstruction Finance Corporation (U.S.A.) railways power

Due to the slackening severity of air raids, the average daily numbers of shelterers in London tube stations have tended to drop since the beginning of the year, but with rises in April and May as the result of heavy raids on the London area during the night of April 16/17 and May 10/11. The average daily numbers have been as follow: January, 88,000; February and March, each 60,000; April, 66,000; May, 70,000; June, 50,000; and July, 28,000. On July 27 the actual number reached as low a figure as 21,929.


SHELTERERS' BEDDING
The practice of shaking bedding over the platforms, tracks and in the subways is strictly forbidden

Above : London Transport platform poster


CLEAN BEDDING
You want your bedding to be clean and healthy. Read the following carefully, it will help you.
1. Blankets, sheets, pillow-cases and counterpanes (quilts), can be collected in the morning, washed, dried and aired, and returned the same day about 6 p.m.
2. The prices are :—
BLANKETS - 9d. each.
SHEETS - 3½d. each.
PILLOW-CASES - 2d. each.
COUNTERPANES - 6d. each.
3. Payment must be made in advance.
4. Your bedding must have sewn-on tapes with your name or National Registration number in coloured cotton or marking ink.
5. See your Shelter Warden for further particulars.

Right : Westminster City Council poster

The Westminster City Council has arranged recently with a large firm of launderers to wash blankets, sheets, pillow cases, and counterpanes, at low standard prices and to return them the same day. The poster giving details of the arrangements is reproduced herewith.

Essential Work Order for Dock Labour

An Essential Work (Dock Labour) Order, designed to secure to the port and transport industry a regular, adequate, and mobile labour force, has been made by the Ministry of Labour & National Service. It will not at present apply to the Merseyside and Clydeside ports, where the Minister of War Transport is now the employer of all dock labour, but it will cover the Port of London and the principal ports on the Bristol Channel, the Firth of Forth, the Humber, the Tees, Tyne, and Wear. Details of the Order are given at page 227.

Rapid Repair of Railway Damage

More than once in these columns we have referred to the comparative difficulty of destroying railway lines and the relative ease and speed with which they can be restored, matters which the air forces of most of the belligerent countries fully appreciate. Naturally in present circumstances the principal danger to which railways are subjected is from enemy air attack, but our American contemporary, the *Railway Age*, has recently quoted an example of ordinary peacetime damage resulting from fire which was made good in a very short time. On the night of Saturday, June 21, the important four-track bridge of the Boston & Maine over the Mystic river in Somerville, Massachusetts (a few miles out of Boston), was put out of commission by a fire, but on the Monday morning all trains were operating practically on time and season-ticket holders " read all about it " in a quarter-page advertisement placed by the railway in the morning paper. The advertisement, which was headed " It's a H– –l of a Job to Burn Up a Railroad," stated among other things that normal service was restored only 35 hr. 13 min. after a $125,000 fire swept the Mystic river bridge damaging timber and sleepers, bending and twisting rails, and destroying drawbridge machinery and signalling apparatus. Before midnight on the Saturday, materials from fairly distant points were arriving at the bridge site together with repair gangs drawn from a wide area. A substitute bus service was maintained on the Sunday—manned by drivers hastily summoned during their off-duty period—and on Monday morning the normal business traffic was again conveyed by rail.

Transport of U.S.A. Aid to Russia

In giving material aid to Soviet Russia in the conduct of the war, the U.S.A. Government is faced with a difficult transport problem, according to data made available by the United States Department of Commerce. Due to the danger to shipping by the Atlantic route, goods will possibly be sent *via* the Pacific Ocean to Siberia. After a voyage of some 4,500 miles across the Pacific, requiring from 15 to 16 days

DEFENCE AREAS

Under directions given by the Regional Commissioners for the Eastern and South-Eastern Regions under Defence (General) Regulation 18a, persons are prohibited from entering for the purpose of a holiday, recreation or pleasure certain areas in East Anglia, Kent and Sussex, and the Isle of Wight, which have been declared to be Defence Areas. The railway stations in these areas are set out in the list below.

The directions do not apply to persons ordinarily resident in the areas.

RAILWAY STATIONS IN THESE AREAS :—

ABERNANT
ALDEBURGH
ALDERT
ALDRINGTON HALT
ALLHALLOWS
ALMSFORD (ESSEX)
ALTHORNE
ALVERSTONE
AMBERLEY
ANGMERING
APPLEDORE
ARUNDEL
ASHFORD (KENT)
ASH TOWN
ATTLESFORD
ATTLESHAM HALT

BARCOMBE
BARCOMBE MILLS
BARHAM
BARMING
BATTLE
BEARSTED & THURNHAM
BEASSOURNE
BELTON & BURGH
BELTRING & BRAMBRIDGES HALT
BELLMUCLE HALT
BENFLEET
BENNET ARMS
BERWICK (SUSSEX)
BEXHILL
BIDDENDEN
BIRCHINGTON-ON-SEA
BISHOPSBOURNE
BISHOPSTONE
BLACKWATER (I. OF W.)
BODIAM
BRADING
BRAMBER
BRAMBLEDOWN HALT
BRAMPTON (SUFFOLK)
BRIDGE
BRIGHTLINGSEA
BRIGHTON
BROADSTAIRS
BROOKLAND HALT
BURGESS HILL
BURNHAM-ON-CROUCH
BURNHAM MARKET

CANTERBURY
CANTERBURY
CARBROOKE HALT
CATFIELD
CHALKWELL
CHARING
CHARTHAM
CHATHAM
CHERITON HALT
CHESTFIELD & SWALECLIFFE HALT
CHILHAM
CHISLET COLLIERY HALT
CLACTON-ON-SEA
CLIVE
COLLINSTON HALT
COODEN BEACH
COOKSBRIDGE
CORTON
COWES
CRANBROOK
CROMER
CROWHURST
CUXTON

DARSHAM FOR YOXFORD
DARTFORD
DEAL
DENTON HALT
DERSINGHAM
DOCKING
DOLLMAN HALT
DOVER
DOVERCOURT BAY
DUMPTON PARK
DURRINGTON-ON-SEA

EASTBOURNE
EASTCHURCH
EAST FARLEIGH
EAST MALLING HALT
EAST MINSTER-ON-SEA
EASTRY JUNCTION
ELMAN
ELLINGHAM
ELVINGTON (KENT)
ETCHINGHAM
EYNSFORD
EYTHORNE

FALMER
FAMBRIDGE
FARRINGDAN ROAD & SUTTON-AT-HONE
FAVERSHAM
FAWKHAM
FELIXSTOWE
FELMINGHAM
FISHERGATE HALT
FOLKESTONE
FORD (SUSSEX)
FRESHWATER
FRINTON-ON-SEA
FRITTENDEN ROAD

GAYTON ROAD
GILLINGHAM (SENT)
GLYNDE
GOOSHILL HALT
GORING-BY-SEA
GORLESTON-ON-SEA
GOUDHURST
GRAIN CROSSING HALT
GRAVESEND
GREAT BENTLEY
GREAT CHESTEY
GREATSTONE-ON-SEA
GREENHITHE
GRIMSTON ROAD
GROVE FERRY
GUNTON

HADDISCOE
HAILSHAM
HALLING
HAM BRIDGE HALT
HAMPDEN PARK
HAM STREET & ORLESTONE
HARBLETHAM
HARTY ROAD HALT
HARWICH—PARKESTON QUAY
HARWICH TOWN
HASSOCKS
HASTINGS
HAVEN STREET
HAWKHURST
HEACHAM
HEADCORN
HEATHFIELD (SUSSEX)
HELLINGLY
HENLEY
HENFIELD
HERNE BAY
HIGHAM (KENT)
HIGH HALDEN ROAD
HIGH HALSTOW HALT
HILLINGTON
HOCKLEY
HOLMAN
HOLLAND ROAD HALT
HOLLINGBOURNE
HOLT
HONNINGTON
HOPTON
HORRINGFORD
HOTHFIELD HALT
HOVE
HUNSTANTON
HYTHE (KENT)

ISFIELD
ISLE OF WIGHT (ALL STATIONS)

JUNCTION ROAD HALT

KEARSNEY
KEMSLEY HALT
KING'S LYNN
KIRBY CROSS
KNOWLTON

LANCING
LANGFORD & ULTING
LEIGH-ON-SEA
LEISTON
LENHAM
LEWES
LEYSDOWN
LITTLEHAMPTON
LONDON RD (BRIGHTON)
LONGFIELD HALT
LOWESTOFT
LYDD
LYMINGE

MAIDSTONE
MALDON EAST & HITHERMEE
MALLING
MANNINGTREE
MARDEN
MARGATE
MARTHAM FOR ROLLESBY
MARTIN MILL
MEOPHAM
MERSTONE
MIDDLE STONE HALT
MIDDLETON TOWERS
MILL HILL (I. OF W.)
MILTON RANGE HALT
MINSTER JUNCTION
MINSTER-ON-SEA
MISTLEY
MOUNTFIELD HALT
MUMBLES-LY-ON-SEA

NEWCHURCH
NEWNHAVEN
NEW ROMNEY
NEWNHAM & CRANLEY
NEWNINGTON
NEWPORT (I. OF W.)
NEW ROMNEY
NINEWOOD
NORMAN'S BAY HALT
NORTHFLEET
NORTHIAM
NORTH WALSHAM
NORTH WOOTTON

ORE
OULTON BROAD
OVERSTRAND

PASTON & KNAPTON
PEVENSEY & WESTHAM
PEVENSEY BAY HALT
PLUCKLEY
PLUMPTON
POLSGATE
PORTSLADE & WEST HOVE
PORT VICTORIA
POTTER HEIGHAM
PRESTON PARK (SUSSEX)
PRITTLEWELL
PULBOROUGH

QUEENBOROUGH

RAINHAM (KENT)
RAMSGATE
RAYLEIGH
REEDHAM
RICHBORO' CASTLE HALT
ROBERTSBRIDGE
ROCHESTER
ROCHFORD
ROLVENDEN
RYDE
RYE

ST. HELENS (I. OF W.)
ST. LAWRENCE HALT (I. OF W.)
ST. LEONARDS
ST. OLAVES
SALEHURST HALT
SANDGATE
SANDLING JUNCTION
SANDOWN
SANDWICH
SANDWICH ROAD
SAXMUNDHAM
SEAFORD
SEDGEFORD
SELLING
SHANKLIN
SHARNAL STREET
SHEERNESS
SHEPHELD PARK
SHEPHERDS WELL
SHERINGHAM
SHIDE
SHOEBURYNESS
SHORNE-BY-SEA
SHORNCLIFFE
SIDESTRAND HALT
SIDLEY
SITTINGBOURNE
SMEETH
SNAILHAM HALT
SNETTISHAM
SNODLAND
SNOWDOWN & HOMERTON HALT
SOLE STREET
SOMERLEYTON
SOUTHSEA & ROSEMILL HALT
SOUTHEND
SOUTHFLEET
SOUTH LYNN
SOUTHMINSTER
SOUTHWICK
SOUTHWOLD
STALHAM
STEMBRIDGE
STAPLE
STAPLEHURST
STEYNING
STONE JUNCTION HALT
STONE CROSSING HALT
STONEHALL & LYDDEN HALT
STRODD
STURRY
SWALE HALT
SWANLEY
SWANSCOMBE HALT

TENTERDEN
TESTON CROSSING HALT
TEYNHAM
THORINGTON
THORPE BAY
THORPE-LE-SOKEN
THORPENESS
THREE OAKS & GUESTLING HALT
TICEHURST ROAD
TILMANSTONE COLLIERY HALT
TOLLESBURY
TOLLESHUNT D'ARCY
TOLLESHUNT KNIGHTS
TOYN
TRIMINGHAM
TRIMLEY

UBBLITE HALT

YENTNOR

WALDRON & HORAM
WALMER
WALSINGHAM
WALTON-ON-THE-NAZE
WATCHING-WELL
WATERINGBURY
WEELEY
WELLS-ON-SEA
WESTCLIFF-ON-SEA
WESTENHANGER
WESTGATE-ON-SEA
WEST RUNTON
WESTBOURNE
WHIPPINGHAM
WHITSTABLE
WHITWELL (I. OF W.)
WICKHAM BISHOPS
WICKTON HALT
WINCHELSEA
WINGHAM
WITTERSHAM ROAD
WIVELSFIELD
WIVENHOE
WOLFERTON
WOODNESBOROUGH
WOODNESBOROUGH ROAD
WOOTTON
WORSTEAD
WORTHING
WRABNESS
WROTHAM & BOROUGH GREEN
WROXALL
WYE

YALDING
YARMOUTH (GREAT)
YARMOUTH (I. OF W.)

Where more than one station serves the same town or place, all such stations, although not named, are included in this restriction.

New Railway Executive Committee poster listing all the railway stations at present in Defence Areas

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for ships at a moderate speed, there still remains some 5,780 miles from Vladivostock, Siberia, *via* the Trans-Siberian Railway to Moscow. The 5-ft. gauge of the Russian railways would preclude use of existing American rolling stock to increase the available transport equipment there, unless costly conversion were made. The capacity of the Trans-Siberian is not known, but it is reported from apparently authentic sources in the Far East that as recently as June, 1941, Japan was supplying Germany with a total of 1,500 tons of raw material daily over the Trans-Siberian route. This, of course, represented only a portion of total business on the railway. A study on the railway by the U.S.A. Department of Commerce issued in January, 1940, stated that freight traffic from the Far East economic area served solely by the Trans-Siberian line increased from 5,400,000 tons in 1932 to 15,600,000 tons in 1937, an increase of almost 300 per cent. The running time of the fastest passenger trains over the all-Russian route from Vladivostock to Moscow is reported to be about nine days. Goods trains, averaging 30 vehicles, might require a longer time, but in wartime would probably have precedence over passenger traffic.

Inland Water Transport in Central Europe

Dr. Dorpmüller, the Reichsminister of Transport, stated in the *Berliner Börsen-Zeitung* of June 21 that German troops had cleared, within the short period of eleven days, all the obstacles to Danube traffic which the Serbs had created by the destruction of bridges, etc., over the river. Commenting on the value of Danube traffic, Dr. Dorpmüller pointed out that the navigable part from Regensburg to Sulin represented 15·5 per cent. of the total length of German navigable waterways. The importance of the Danube would, however, be enhanced considerably with the completion of the Oder-Donau and the Rhein-Main-Donau Canals, for coal from the Reich to the Balkans would be carried by way of the Danube. He declared that 1,000-ton barges fully laden could be used up and down the river, once an efficient lock system near the Iron Gates had been completed. The distances to be covered would be shortened, Budapest to Stettin becoming 1,200 km. (745 miles) *via* the Oder-Danube Canal, and Budapest to Hamburg 1,520 km. (945 miles). In discussing a number of other projects, Dr. Dorpmüller concluded that the traffic on the Danube was likely to enter into a stage of unprecedented prosperity, provided that its administration was under firm direction.

Herr A. Hager said in the *Hamburger Fremdenblatt* of July 9 that intensification of inter-European trade would depend partly on the extension of the European waterways network. Although, in the past, canals had been built to serve exclusively national interests, it was now necessary to connect the natural waterways of different European countries. The *Berliner Börsen-Zeitung* of July 6 stated that, during recent weeks, work had been begun on the construction of a canal connecting the rivers Rhine and Rhone. The operations started in Swiss territory near the town of Bussigny.

New U.S.S.R. Inland Waterways

No other country in the world is so rich as the Soviet Union in natural waterways, where approximately 250,000 miles are available for shipping and floating down timber. Before 1930 little had been done to harness these waterways, and many of the pre-Soviet canal systems were built 150-200 years ago. The tremendous development of inland water communication which has taken place during the last ten years has been brought about mainly by the requirements of the various five-year plans. The development of waterways was required to open up new industrial regions and to relieve the strain on the railway system. Apart from purely industrial requirements, it was considered essential to make some military use of this development. In the case of the Stalin Canal, connecting the Baltic to the White Sea, the construction was dictated entirely by strategical reasons. On the other hand, the military factor in the case of the Moscow Canal is comparatively trifling until the whole of the system of rivers and canals linking up the Azov, Black, and Caspian Seas to the Baltic has been completed, when a considerable measure of naval strategical independence will have been achieved. The Soviet authorities aim at a unified system of waterways connecting the Baltic, White, Caspian, Azov, and Black Seas, and linking them with Moscow. The depth throughout the system is to be such as to allow light cruisers to be transferred from one area to another.

The rivers Neva and Svir and the Imeni-Stalin Canal form the Baltic to White Sea Canal, which is 560 miles long. On the River Svir one large lock has lately been completed and a second lock is under construction ; a temporary canal has been built round this area so as to avoid interference with navigation during construction. On the Imeni-Stalin Canal there are 19 locks, built in 1932 and mostly made of wood, with dimensions : length 379 ft., width 50 ft., depth 15 ft. The depth of water in the canal is about 12 ft.

The Marinski system connects Leningrad to Ribinsk on the Volga. It is suitable only for barges up to 800 tons, and

Progress with the construction of the Trans-Saharan Railway is illustrated in the pictures above, taken from the May issue of the French publication "L'Illustration," and reproduced in the "Illustrated London News" of August 9. The left-hand view shows the formation of an embankment of broken stone, which is stated to be in the neighbourhood of Colomb Bèchar. The right-hand picture shows that concrete sleepers are being used. Accounts of the scheme were given in THE RAILWAY GAZETTE *of May 30 (page 596) and June 13 (page 663)*

owing to the large number of locks (43) the transit from Ribinsk to Leningrad is slow. Modernisation plans include increasing the depth and reducing the number of locks to six. The Moscow-Volga canal, 80 miles long, was completed in 1937 and is designed to take vessels drawing 15 to 18 ft. It is not at present used by vessels of this draft, owing to the incomplete state of the reconstruction of the general canal system. The Manych system was designed to connect the head-waters of the Manych and Kuma Rivers and thus the Black Sea to the Baltic, *via* the Caspian Sea and River Volga. A considerable amount of the construction of this canal was completed, but it has now apparently been abandoned, presumably on account of the navigational difficulties prevailing in the shallow and ever-falling waters of the Caspian Sea. The Volga-Don canal will join the River Don to the River Volga immediately below Stalingrad. When complete it will link the Black Sea with the main canal system. This canal is believed to have been begun early in 1939, but it is not likely that work will be completed for some time. The system, from the Sea of Azov, *via* the River Don, is designed for a minimum depth of 21 ft. The completion of this canal will probably solve the problem set by the falling level of the Caspian Sea, since it will be possible to harness the waters of the River Don to the Lower Volga.

The German Transport Credit Bank

The Deutsche Verkehrs-Kreditbank A.G., which administers the financial resources of the Reichsbahn, as well as certain transport credits granted by the Reichsbank, shows in its annual report for 1940 an increase of revenue of 30·8 per cent. over that of 1939, according to the *Deutsche Allgemeine Zeitung* of July 11. Unlike other banks, the Verkehrs did not invest its deposits in long-term securities. Having regard to the constant cash requirements of the Reichsbahn, the Verkehrs increased its liquid assets by RM. 262 million (Treasury Bills, bills of exchange, etc.) and its holdings of long-term securities by only RM. 36 million.

German Private Railways and Transport Tax

The effect of the proposed reintroduction to private railway and tramway companies of the transport tax in Germany was discussed in THE RAILWAY GAZETTE of July 11, at page 44. Further details have now reached this country and show that these taxes are high ; 7 per cent. is levied on the goods rates ; 12 per cent. on luggage rates ; 16 per cent., 14 per cent., and 11 per cent. on first, second, and third class fares, respectively ; and 6 per cent. on tramway fares. Consignments of coal alone are exempt from the impost. In recent pre-war years the intensification of road competition resulted in a steady retrogression in the financial results of these railway companies, and only the four-year plan, with its considerable increase in industrial activities, helped to redress the balance. In many cases the decentralisation of industry led to important works being transferred to areas served only by privately-owned railways, and entailed so considerable an increase in their traffic that financially they were not able to deal with the situation which arose. In some cases the Reichsbahn had to intervene by taking over the services and indemnifying the shareholders ; at the same time the Reichsbahn administration declared that it was not its policy to embark on an intensive programme of railway nationalisation. The outbreak of war caused a suspension of competition between the railways and road motor transport, and this factor considerably improved the financial position of the private railway companies. It also caused a revival of the question of the reintroduction of the transport tax from which the private railways had been exempt since the crisis of 1931. An ordinance requires that excess profits arising from the war shall pass direct to the State, and has also re-opened the tariff problem of the private railways.

Most of the 60 or 70 private lines, and several hundreds of light and secondary railways, as well as tramways, have tariffs far in excess of those of the Reichsbahn, and it is believed that the intervention of the price control authorities may bring about a levelling of the tariffs to those of the Reichsbahn. This would, of course, eliminate part of the excess profits private railways secure in existing circumstances. It is also believed that the Treasury would be prepared to forego the remainder of the excess profits with a view to enabling the companies to meet road motor competition when normal times return. As has been previously shown, in THE RAILWAY GAZETTE of July 11, the working receipts of the Reichsbahn for 1940 increased by 30·8 per cent. as compared with the previous year, and it is generally believed that the increase is proportionately higher in the case of the private railways, although no figures are yet available. Results obtained in 1938 and 1939 by some of the leading privately-owned railways in Germany were as follow :—

	Gross profits Million Reichsmark		Net profits	
	1938	1939	1938	1939
South German Railway	18·2	20·5	0·9	0·9
Hanover Tramways	13·2	15·9	1·0	1·0
Bochum-Gelsenkirchen Tramways ...	9·1	11·7	0·36	0·35
Aachen Light Railways	3·8	4·9	—	0·27
Halberstadt-Blankenburg Light Railway	4·3	4·8	0·55	0·64

Transport in Germany

Summer time is to be continued in Germany throughout the winter. German time will thus be one hour ahead of British time, as in pre-war years.

An urgent appeal to the German public has been issued through the morning newspapers to the effect that holidays should be spread throughout the whole year and spent in the less frequented resorts, to avoid burdening the Reichsbahn.

It is reported that the German military forces have made considerable progress in converting to standard gauge the 5 ft. railways in Russian territories now in German occupation. The construction of concrete motor roads in such territories is also stated to be proceeding rapidly.

The German Locomotive-Building Industry

The Wiener Lokomotivfabrik A.G., a subsidiary of Henschel und Sohn G.m.b.H., Kassel, reports that it continued to extend its plants in 1940, according to the *Berliner Börsen-Zeitung* of June 30. In 1940, as compared with 1939, the company's turnover rose by 66 per cent. to RM. 40,700,000. The wage bill increased by 69 per cent., and the taxes payable to the Exchequer rose by more than 300 per cent. The *Berliner Börsen-Zeitung* of July 2 stated that a new locomotive-manufacturing company had been founded in Kattowice under the title of the Oberschlesische Lokomotivwerke A.G. Three-quarters of the share capital of RM. 5,000,000 of this new company is in the hands of Henschel of Kassel, and one-quarter in those of the A.G. Ferrum of Kattowice. Some plants of the A.G. Ferrum, particularly those in Krakow, are operated by Henschel as a trustee. In addition, the Ballestrom concern, engaged mainly in the manufacture of steel foundry and rolling products, has considerable financial interests in the A.G. Ferrum. It is reported that the close connection between Henschel and Ballestrom through their joint interests in the A.G. Ferrum may prove to be the beginning of far greater collaboration between the industrial combines of Upper Silesia.

Transport in Holland

Further restrictions have been announced for travelling in the coastal area south of the Hook of Holland, the part of the provinces of South Holland and Zeeland comprising the islands and inlets between the Scheldt and Meuse mouths. In May this area was declared a prohibited zone for non-residents, and now restrictions have been imposed on the residents. All non-German or Dutch living in the area must report to the police once a week.

The press in Holland has been instructed not to publish further restrictions in passenger and goods transport services unless specially authorised to do so by the Chief Press Controller.

The Chief General Manager of the Netherlands Railways, Professor Goudriaan, has been released from a German concentration camp, where he had been interned for some months on a charge of obstructing the German Occupation Forces, notably for refusing to hand over the Dutch Royal train for the use of the German Governor, Seyss-Inquart. He has resumed duties at the railway head offices in Utrecht.

Consignments conveyed by goods trains are now accepted for transport only on specified days for each destination, in some cases only once a week. Bulky goods, bicycles, prams

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and mail carts, furniture, and a few other articles, are accepted only if sent in wagon loads.

Operating results of the Netherlands Railways for 1940, which include 7½ months of German occupation, show 124 million florins (£16½ million) revenues, against 139 million florins (£18½ million) operating expenditure. These figures show increases of 14 million and 12 million florins respectively over 1939. Rates and fares were increased during the year, train mileage decreased, particularly heavily in passenger traffic. Provisional repairs of war damage are estimated at 4½ million florins, which sum is not included in the operating expenditure figure, however.

The American Express Company has closed its offices throughout Holland.

The Antwerp port dues have been raised by 10 per cent. from July 1.

New Frontier Stations Between France and Germany

Railway traffic between France and Germany is using a number of newly-established frontier stations, a list of which is given below. The stations are listed from south to north.

French name	German name*	Remarks
Montreux-Vieux ...	Altmünsterol Grenze	On the Mulhouse-Belfort line, 34 km. (21·1 miles) west of Mulhouse and 15 km. (9·3 miles) east of Belfort.
Ste. Marie-aux Mines	Markirch Grenze ...	On the St. Dié-Sélestat line, 21·4 km. (13·3 miles) west of Sélestat (which the Germans call Schlettstadt). The line from Sélestat joins the Strasbourg-St. Dié line at Raves-Ban de Laveline, 35·7 km. (22·1 miles) to the west of Sélestat.
Saales	Saal (Elsass) Grenze...	On the Strasbourg-St. Dié line 85·5 km. (53·1 miles). Saales is 61·6 km. (38·3 miles) west of Strasbourg. The first station to the west of Saales is Colroy Lubine, 16·4 km. (10·2 miles) east of St. Dié.
Nouvel Avricourt ...	Elfringen Grenze ...	On the Strasbourg-Sarrebourg-Nancy line, 91·1 km. (56·6 miles) west of Strasbourg and 159 km. (98·6 miles) to the east of Nancy. The first station to the west of Nouvel Avricourt is Igney Avricourt, 92·5 km. (57·44 miles) west of Strasbourg.
Chambrey	Kambrich Grenze ...	On the Sarreguemines-Benestroff-Château Salins-Nancy line. (German forms: Saaregemünd for Sarreguemines; Bensdorf for Benestroff; Salzbergen for Château Salins). Chambrey is 72·1 km. (44·8 miles) west of Sarreguemines and 28 km. (17·4 miles) east of Nancy.
Noveant	Neuburg (Mosel) Grenze	On Metz-Pagny sur Moselle (to Nancy and Lérouville) line. Novéant is 14 km. (8·7 miles) west of Metz, and he first station to the west of Novéant is Pagny sur Moselle.
Amanvillers	Almansweiler Grenze	On the Metz-Conflans Jarny-Verdun line, 14 km. (8·7 miles) east of Conflans Jarny. The first station to the west of Amanvillers is Batilly, 8 km. (5 miles) east of Conflans Jarny.
Gross Mœuvres ...	Gross Mövern Grenze	On the Hagondange-Conflans Jarny-Verdun line. (The German form for Hagondange is Hagendingen.) Gross Mœuvres is 10·1 km. (6·3 miles) west of Hagondange. The first station to the west of Gross Mœuvres is Homécourt-Jœuf, 13 km. (8·1 miles) east of Conflans Jarny.
Fontoy	Fentsch Grenze ...	On the Thionville-Longuyon line. (German form for Thionville is Diedenhofen). Fontoy is 14·5 km. (9 miles) to the west of Thionville and the first station to the west of Fontoy is Audun le Roman, 7·8 km. (4·8 miles) from Fontoy or 23 km. (14·3 miles) east of Longuyon.
Redange	Redingen Grenze ...	On the Luxembourg-Esch-Longwy-Longuyon line, 26·3 km. (16·3 miles) southwest of Luxembourg and 5·3 km. (3·3 miles) southwest of Esch.
Rodingen	Rodingen (Luxemburg) Grenze	On Esch-Petange-Rodingen,—Athus (Belg.) line, 18·6 km. (11·6 miles) west of Esch. The next station to the west of Rodingen is Athus in Belgium.

* It will be noticed that in every case the German word *Grenze* (frontier) is added

French Rolling Stock

Among the documents of the Direction des Services Administratifs of Vichy found by the Allies in Syria were details about seizure by Germany of French rolling stock. By August 4, 1940, only 375,000 wagons remained in France of the 515,000 existing in September, 1939. By the beginning of 1941 only 250,000 wagons were left to France, half of the French stock prior to the outbreak of war.

Peru and Ecuador Hostilities

Fighting between frontier forces of Ecuador and Peru, which had ceased on July 31 after diplomatic intervention by Argentina, Brazil, and the United States of America, broke out again on the night of August 2. The Peruvian foreign office issued a communiqué saying that Ecuadoran forces had attacked, and the Secretary-General of Ecuador issued a statement blaming Peruvian troops for the outbreak.

Railway Powers for Reconstruction Finance Corp.

According to our American contemporary the *Railway Age*, a Bill which was passed by the Senate on May 16 gave authority for the Reconstruction Finance Corporation "to produce, lease, purchase, or otherwise acquire railroad equipment, including rolling stock . . . and parts, equipment, facilities, and supplies in connection with such railroad equipment." The Reconstruction Finance Corporation was incorporated by an Act of Congress on January 22, 1932, for 10 years, subject to earlier dissolution, with the object of providing emergency financing facilities for financial institutions, and to aid in financing agriculture, commerce, and industry. The corporation is specifically authorised, under its subsequent legislation, to make loans to railways, and this it has done on a number of occasions and to a considerable extent. The Bill which was recently before the United States Senate would appear to give the corporation such sweeping powers in the financing of the U.S.A. defence programme that it could use them to build and equip a railway if that should be deemed politic in the national interest. In the course of the debate it was stated that, although there was no specific provision to that effect, if the Reconstruction Finance Corporation did build a railway, the line would have to be sold after the defence emergency had passed. This conclusion was based on the Bill's general defence objectives and upon the judgment of the general counsel of the R.F.C.

Before passage by the Senate, the Bill was amended to stipulate that nothing in it should be construed to authorise the corporation to take any action, directly or indirectly, with respect to any project, authority for which or expenditures for which had been considered and rejected by Congress since January 1, 1926. That limitation, it was pointed out, would prohibit the R.F.C. from work on such projects as the St. Lawrence Seaway, the Florida Ship Canal, or the Tennessee-Tombigbee Waterway. In the course of the debate it was stated that there had been in contemplation the construction of a railway which would take the form of providing additional railway facilities between the Mesabi Range and Lake Michigan so as to give the iron ore traffic an alternative route by-passing Lake Superior and the Soo Canal locks which might become vulnerable if an enemy aircraft carrier were to get into the south end of Hudson Bay some 600 miles away. The railway from Duluth to the north west corner of Lake Michigan is a single-track and in a bad state of repair. A double-track line could be constructed and the ore carried from the Mesabi Range to the ports of Escanaba and Manistique, and possibly Green Bay on Lake Michigan. The railways had advised that if they had to haul the ore from Duluth and Superior through the Chicago gateway down to the Cleveland-Pittsburgh area it would be impossible to do the job with the present equipment. It was for this reason that powers were contained in the Bill to approve and construct railways. In justification for the powers relating to rolling stock, it was stated that increased rail traffic was expected to result from the proposed transfer of intercoastal ships to other routes in connection with the aid-to-Britain policy. A private corporation such as a railway would not willingly enter into the purchase of the great amount of additional equipment required if it were known that immediately on the cessation of the war all these ships would be brought back and put into coastwise trade. It was therefore felt that there should be a Government agency which could speedily acquire that equipment.

R.A.S. Air Mail Service to Northern Ireland

With a view to reducing the transit time between Great Britain and Northern Ireland, a surcharged air mail service for the conveyance of letters, letter packets, and postcards is being inaugurated on Monday next, September 1. It will be operated by Railway Air Services Limited.

RAILWAY AND OTHER MEETINGS

Brush Electrical Engineering Co., Ltd.

The fifty-second annual general meeting of the Brush Electrical Engineering Co.Ltd.was held at the works on Tuesday of last week. Sir Ronald W. Matthews (Chairman of the company) presided.

The Chairman said: Since the last meeting Mr. D. B. Hoseason has been appointed a director. Mr. Hoseason has been associated with the electrical industry for many years and he brings with him a great amount of knowledge and experience, which will be of much assistance to your company.

The works throughout the year have been busy and there was a very substantial increase in turnover. The trading profit, at £127,620, is nearly double that of last year, which was £67,765. Two items in the profit and loss account are considerably in excess of the figures for last year; war risks insurance, which takes £12,819, against £3,803, and reserve for depreciation and renewal of plant £35,000, against £14,118 for depreciation last year. After charging other items as shown in the profit and loss account and bringing into account sundry dividends, fees, and repayments, the profit for the year carried to the balance-sheet is £52,544, against £31,705. Adding the balance of £10,888 carried forward from last year, the amount available in the profit and loss account is £63,432.

You will note that in addition to the reserve of £35,000 for depreciation and renewal of plant an amount of £25,000 has been set aside out of profits and transferred to general reserve. Your directors regret that they are not in a position to recommend the payment of a dividend on the ordinary shares, but after giving careful thought to the question they felt it was desirable to create a substantial general reserve.

Turning to the balance-sheet, the fact that the company has been fully employed during the year is reflected in the higher figures shown for stock and work in progress, debtors, and creditors. It will be noted that the sum of £10,568 has been written off goodwill, and a further amount of £7,740 off expenditure on air-raid precautions. As was the case last year no depreciation has been provided on buildings, but these have been kept in thorough repair out of revenue.

This year I do not propose to give an account of the company's various activities, but I can assure you that the steady progress which the company has made during the last year or two is continuing. In spite of difficulties and restrictions the company has been able to maintain many of its export connections, and during the year has extended its research.

With the increasing need for trained personnel in industry the company has inaugurated a Brush Scholarship tenable for four years, and is encouraging men from public schools and universities to become pupils at the works. More attention has been paid to the welfare of employees, and the personnel in the labour and welfare department has been augmented. I would like to express the board's special appreciation of the admirable work of employees during the year.

The directors' report and accounts were adopted.

QUESTIONS IN PARLIAMENT

Petrol Rationing

Sir Waldron Smithers (Chislehurst—C.), on July 22, asked the Secretary for Petroleum whether he would have enquiries made as to the amount of petrol being wasted in motor craft on the Thames, in cars of people who motored to London every day when there was a good train service, and in joy-riding during week-ends at country and riverside hotels; and would he take the necessary action to withdraw petrol coupons used for these purposes.

Mr. Geoffrey Lloyd (Secretary for Petroleum) replied that the amount of petrol issued to motor craft had been drastically rationed since the outbreak of the war and the ration had recently been still further reduced. The use of supplementary rations for daily long distance journeys to London where other means of transport were available, or for pleasure purposes, was a contravention of the conditions under which supplementary rations were issued, and would be dealt with as such.

Sir W. Smithers urged that necessary steps should be taken, in order to save shipping space, to tighten up the control of petrol not used for essential services.

Mr. Geoffrey Lloyd said he announced a short time ago the balanced policy which the Government were adopting of enforcing strictly the use of supplementary rations for the purposes for which they were given, but at the same time, in the basic ration, leaving a certain small quantity of petrol within the free discretion of the user.

When Mr. E. Shinwell (Seaham—Lab.) asked why he should permit the use of petrol for small motor craft for pleasure purposes, Mr. Lloyd said there were many considerations which had to be borne in mind. A number of these craft, because they were in commission, at the time of the emergency, played an extremely useful part in the evacuation of Dunkirk.

Mr. Evelyn Walkden (Doncaster—Lab.), on July 22, asked the Secretary for Petroleum, whether he had considered the desirability of abolishing completely the present basic petrol allowance after the current quarter or licensing period, in view of the assistance this would afford to the police and other inspecting authorities in checking abuse of supplementary allowances.

Mr. Geoffrey Lloyd: Yes, Sir. My hon. friend's suggestion has been carefully considered, but having regard to the useful purposes served by the basic ration, the Government is of the opinion that it would not, in present circumstances, be in the public interest to abolish it.

Travel for Football Clubs

Mr. J. S. Holmes (Harwich—Lib. Nat.), on August 7, asked the Parliamentary Secretary to the Ministry of War Transport whether he knew that the Football League had called on the 11 London member clubs to carry out a programme requiring each club to travel nearly 9,000 miles; that those and certain other clubs had determined to carry out a competition among themselves which would involve only 3,000 miles of travel for each club, and whether he would limit travel by clubs during the coming football season.

Colonel J. J. Llewellin stated that his Ministry had not been consulted by the Football League but he would take the opportunity of warning all concerned that facilities could not be given for unnecessarily long journeys and that, while the Government was anxious that a reasonable amount of recreation should be available, the travel of workers and transport of war materials must come first. Programmes should therefore be arranged accordingly.

Accommodation for Forces

Sub-Lieutenant H. W. Butcher (Holland with Boston—Lib. Nat.), on August 7, asked the Parliamentary Secretary to the Ministry of War Transport whether, for the information of the members of the Forces travelling third class on the railway, and for whom no seating accommodation was available, he would place notices in the corridors indicating under what conditions they might occupy first class seating accommodation.

Colonel Llewellin wrote in reply: No, Sir. I think that it is better that the allocation of seats in first class compartments to third class ticket holders should be left to the railway company's staff who are in a position to know what accommodation is available.

LARGE TENDERS.—The demand for higher sustained speed with greater loads has led in America to tenders with over 25,000 U.S. gal. water capacity, except on the New York Central, where the provision of water troughs has resulted in a reversal of the usual procedure, the water capacity having been cut down and the coal capacity increased from a maximum of 28 U.S. tons to 43 U.S. tons. This permits of longer locomotive runs between re-fuelling points, with elimination of coaling time and starting and stopping time.

XUM

Notes and News

Sherburn Station.—We learn that Sherburn Colliery station, L.N.E.R., was closed for passenger traffic from Monday, July 28.

Locusts Stop Train in India.—Clouds of locusts which have invaded north-western India are reported to have held up a train in Jodhpur State for over an hour, by creating an impenetrable fog.

Underground Railway for Budapest.—A plan for a network of underground railways in Budapest has been approved by the Hungarian Government, according to the Budapest radio. Two tunnels will be built under the Danube, which divides Buda from Pest, adds Reuters.

Liverpool Corporation Light Railways.—The Minister of War Transport has made the Liverpool Corporation (Extension of Time) Order, 1941 (S.R. & O. 1941, No. 1044), extending by three years the time limited for the completion of Railways Nos. 5, 5A, 10, and 11 authorised by Section 4 of the Liverpool Corporation Light Railways Order, 1936.

Great Southern Railways (Eire).—For the 32nd week of 1941 the Great Southern Railways Company reports passenger receipts of £48,306 (against £48,754), and goods receipts of £49,404 (against £42,934), making a total of £97,710 (against £91,688) for the corresponding period of the previous year. The aggregate receipts to date are passenger £1,265,199 (against £1,114,861), goods £1,585,954 (against £1,448,680), making a total of £2,851,153 (against £2,563,541).

Air Express between Canada and New York.—An extensive development of international air express between New York and many points in Canada served by Trans-Canada Air Lines and the Canadian National Railways was inaugurated on June 24. Trans-Canada Air Lines has established its own express services between New York and Toronto, with the Railway Express Agency (Air Division) performing ground service at New York. The Canadian National Express Department undertakes the ground service at both Toronto and Windsor, and also represents the Railway Express Agency (Air Division), the traffic of which in and out of these cities is carried by American air lines.

Southern Railway Extension of Time Application.—The Southern Railway Company is applying to the Minister of War Transport for an Order under the Special Enactments (Extension of Time) Act, 1940, extending by three years from October 1, 1941, the time now limited by Section 14 of the Southern Railway Act, 1938, for the acquisition of lands at Twickenham, Rochester, and Okehampton, and by Section 31 of the 1938 Act for the acquisition of (*a*) lands required for Widenings No. 1, 8, and 10 authorised by the Act of 1926; (*b*) for the acquisition of lands in Southampton authorised by the Act of 1926; (*c*) lands in Heston and Isleworth required for the bridge lengthening and alteration authorised by the Act of 1929; (*d*) lands in Ifield required for the footbridge and footpath authorised by the Act of 1932 and (*e*) lands at Leatherhead required for Railway No. 1 authorised by the Act of 1935.

Mexican Railway Moratorium.—Meetings of holders of the 6 per cent. perpetual debenture stock, of the registered stock issues "A" and "B," and of the 4½ per cent. second debentures of the Mexican Railway Co. Ltd. have been convened for August 27, at Winchester House, E.C., for consideration of a scheme of arrangement. This proposes a further extension of the existing moratorium for three years from January-April, 1942; to defer until the end of that period the issue of the "A" and "B" (second series) stocks in settlement of unpaid interest; and that the redemption date of the "A" and "B" stocks (first and second series) shall be December, 1950. The scheme also provides for postponement of the sinking funds for redemption of the second debentures until after December, 1950, or the year in which the "B" stock second series is finally redeemed.

Removing Surface Rails in New York.—The lifting of the street surface rails of the New York Central from 11th Avenue, New York, was marked by a ceremony on June 25, attended by officers of the municipality and the railway. Removal of the last 40-ft. section of rail resulted in the surface of 11th Avenue being without steam railway tracks for the first time since the Hudson River Railroad was built in 1849. The West Side improvement, extending 13 miles between St. John's Park station and Spuyten Duyvil, involved the re-location of railway tracks on an elevated structure south of 30th Street and their depression north thereof, the landscaping of Riverside Park, and the establishment of recreation facilities. The work included the removal of 640 buildings.

Santander-Mediterranean Railway.—At the meeting of shareholders of the Anglo-Spanish Construction Company on August 15, the Chairman, Mr. Robert Walker, referred to the taking over by the Spanish Government on February 1, 1941, of the Santander-Mediterraneo Railway. The construction company, formed in 1924 to build the railway, in which it holds 99 per cent. of the capital, is controlled by the Central Mining & Investment Corporation. The railway concession was for 50 years from September 12, 1924, but was nationalised under the Law of January 24, 1941, which provided for the taking over of all the broad-gauge lines. The company has been informed that the prospects of the railway do not warrant the payment of any compensation in the terms of the law, but a considerable amount is due in credits from the Spanish Government, and realisation of the assets is expected to take a considerable time.

Newfoundland Railway Loan.—It was reported by Reuters from New York on August 21 that the Reconstruction Finance Corporation is granting the Newfoundland Railway a 15-year loan of $2,100,000 at 2½ per cent. per annum, to provide rolling stock and repair facilities.

British and Irish Railway Stocks and Shares

Stocks	Highest 1940	Lowest 1940	Prices Aug. 22, 1941	Prices Rise/Fall
G.W.R.				
Cons. Ord.	52	22½	40½	+ 3
5% Con. Pref. ...	103½	58	100½	+ 1
5% Red. Pref. (1950)	105½	88	103	—
4% Deb.	107½	90½	105½	—
4½% Deb.	108½	96½	108	—
4½% Deb.	114½	96	115½	—
5% Deb.	124	106	128	—
2½% Deb.	66½	57	66	—
5% Rt. Charge ...	117½	97	123½	+ 1
5% Cons. Guar. ...	117	90½	120½	+ 1
L.M.S.R.				
Ord.	24⅞	9	15	+ ¼
4% Pref. (1923) ...	60½	21⅛	48½	+ 4
4% Pref.	70⅛	35	64½	+ 3
5% Red. Pref. (1955)	94½	60	91½	+ 3
4% Deb.	101⅛	81	101⅛	—
5% Red. Deb. (1952)	109½	102	108	—
4% Guar.	93⅛	65	93½	—
L.N.E.R.				
5% Pref. Ord. ...	8⅜	1½	3½	+ ½
Def. Ord.	4⅜	1⅛	1⅛	—
4% First Pref. ...	60	20	48½	+ 4
4% Second Pref. ...	22⅜	6½	17½	+ 1
5% Red. Pref. (1955)	80	34½	74½	+ 4
4% First Guar. ...	86½	56	84½	—
4% Second Guar. ...	77½	37	74½	+ 1
3% Deb.	73½	54½	75½	—
4% Deb.	97⅜	74	99½	— 1
5% Red. Deb. (1947)	107	96½	104	—
4½% Sinking Fund Red. Deb.	104	98	101½	—
SOUTHERN				
Pref. Ord.	79	34	60½	+ 4
Def. Ord.	22½	7	14	+ 1½
5% Pref.	104½	58⅛	96½	—
5% Red. Pref. (1964)	105	85	103½	—
5% Guar. Pref. ...	116⅛	90	121½	+ 1½
5% Red. Guar. Pref. (1957)	114⅞	94	111⅛	—
4% Deb.	106⅜	84½	104½	—
5% Deb.	122½	100	126½	—
4% Red. Deb. (1962-67)	106	96½	105	—
4% Red. Deb. (1970-80)	106⅜	93	105	—
FORTH BRIDGE				
4% Deb.	95½	87	94½	—
4% Guar.	93½	81½	94½	—
L.P.T.B.				
4½% "A"	116	103	113½	—
5% "A"	121½	107	123½	—
4½% "T.F.A." ...	105½	101	101½	—
5% "B"	116	102	109½	
"C"	65½	24	45½	+ 4
MERSEY				
Ord.	26	18½	20½	—
4% Perp. Deb. ...	92½	86½	92½	—
3% Perp. Deb. ...	68	63	66½	—
3% Perp. Pref. ...	57	50½	56	—
IRELAND				
BELFAST & C.D.				
Ord.	4	3	4	—
G. NORTHERN				
Ord.	4½	1½	8	+ 1
G. SOUTHERN				
Ord.	12½	4	6	+ 1
Pref.	15½	6	6½	— 1
Guar.	36	15	19½	— 3½
Deb.	55½	40	46½	— ½

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OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is 9.30 a.m. on the preceding Friday. All advertisements should be addressed to:—*The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

Staff & Labour Matters

Dock Labour—Essential Work Order

An Essential Work (Dock Labour) Order, designed to secure to the port transport industry a regular, adequate, and mobile labour force, has been made and will apply at most of the country's ports. The scheme was announced by Mr. Bevin, who described it as a novel development in which he hoped there was some element of permanency for dealing with the problem of decasualisation. The scheme represents, he added, a negotiated settlement between unions, employers, and the State.

The Essential Work Order gives effect to proposals made by the National Joint Council for Dock Labour, which will form a company, to be known as the National Dock Labour Corporation Limited, to promote, finance, and administer schemes. The chairman of the corporation and a finance member will be appointed by the Minister of Labour, and there will be three representatives of employers and of workers, respectively, appointed by the council. The Order will apply to permanent men, though their employment will not be affected by the new arrangements, but other dockers selected for inclusion in the scheme will now always be in employment. The docker will be paid the appropriate rate for his job while at work, and as soon as his job finishes he will automatically come into the employment of the corporation and be paid 5s. for each of the 11 half-days (normally Monday to Saturday noon, inclusive) on which he reports as required but is not allocated to work. The docker's must report regularly and be prepared to take any suitable work offered.

Regular workers will be eligible for an annual week's holiday, for which they will be paid by the corporation 80s. or 75s., according to the size of the port. All wages will be paid weekly, on Thursdays. The cost of all schemes will be met from a national management fund maintained by the corporation. Employers under approved schemes will be required to make a contribution to the fund, which will not, under present arrangements, exceed 25 per cent. of their gross wages bill. The fund will be underwritten by the Exchequer, which will, in addition, make a contribution in respect of certain administrative expenses of the corporation.

Awards for Gallantry

The George Medal has been awarded to Arthur John Rycroft, Chief Inspector, London Midland & Scottish Railway. During an air raid a large number of incendiary bombs fell in a railway siding and wagons caught fire. One of the wagons contained boxes of explosives. Inspector Rycroft got under the van and uncoupled it. Rycroft subsequently helped to deal with several other wagons that were on fire and when working on top of one load he was blown off by an explosion. He went back to work on it immediately.

The British Empire Medal has been awarded to John Nicholas Anderson, Dock Porter, Great Western Railway. During an air raid a bomb fell in the hold of a vessel in which six dock labourers were working. Anderson obtained a rope and descended into the hold in which a quantity of timber was burning and smouldering. After the lead had been given by Anderson other helpers followed. In addition to the danger of suffocation from the smoke and fumes they were working under the water line. Two men were rescued alive and sent ashore. Anderson and his fellow rescuers then dug into the burning debris and recovered the bodies of four men.

The following railwaymen have been commended for brave conduct:—

Frank James Bull, Goods Guard, London Midland & Scottish Railway.

George Henry Clarkson, Fireman, Southern Railway.

Benjamin Leonard Freeman, Yard Inspector, London Midland & Scottish Railway.

Fred Lewis, Cleaner, London Midland & Scottish Railway.

Harry Clifford Smith, Yard Foreman, London Midland & Scottish Railway.

George Arthur Stokes, Driver, London Midland & Scottish Railway.

Railway and other Reports

Pullman Car Co. Ltd.—This company is paying 2 per cent. on the 5 per cent. income stock on account of arrears.

Grand Canal Company.—Ordinary interim dividend at the rate of 2 per cent. per annum for the half-year, against 3¾ per cent.

Oxford Canal Company.—The directors have decided to defer the interim dividend on the ordinary stock until the end of the financial year. A year ago the distribution was 3 per cent.

W. T. Henley's Telegraph Works Co. Ltd.—Trading balance, after taxation, bad debts, contingencies, and special war expenditure, was £400,484 for the year 1940, against £415,204. Net profit after providing for fees, and depreciation £69,918 (£61,246) is £320,566 (£343,853). The sum of £50,000 (nil) is allocated to war contingencies account, and the final ordinary dividend is 10 per cent., making 15 per cent., plus a cash bonus of 5 per cent. (same), leaving £382,397 to be carried forward.

British Wagon Co. Ltd.—Interim dividend in respect of the year ending December 31 next of 3s. a share on the £20 shares (£3 paid) and 1s. a share on the £20 shares (£1 paid), both the (same) as a year ago.

Contracts & Tenders

The *Railway Age* reports that orders for locomotives and freight wagons during the first seven months of the present year exceeded the number bought in any full year since 1929, and that orders for passenger vehicles for the full current year may be the largest since 1929. Locomotive orders placed during the first seven months totalled 853, compared with 371 for the same period a year ago, orders for freight wagons amounted to 102,948, compared with 23,922, and for passenger cars, including the 176 sleeping cars to be built for the Pullman Company, 616, compared with 134.

On July 1, Class I railways had 92,566 new freight wagons on order according to the Association of American Railroads. This is the largest number on order at any time since 1923, and an increase of 27,519 on June 1 this year. It is also more than five times as many as on July 1 last year, at the beginning of the rearmament programme in the United States. Of the total number on order on July 1 this year, there were 59,813 box wagons; 28,008 coal wagons; 2,378 flat wagons; 1,350 refrigerator wagons; 100 stock wagons; and 917 miscellaneous wagons. Reports show that 22,276 of the new freight wagons on order are being built at railway shops.

More new locomotives were on order on July 1 this year than at any time in the past fifteen years, the number being 559, of which 265 were steam and 294 electric and diesel. On July 1, 1940, the railways had 124 new locomotives on order, consisting of 97 steam and 27 electric and diesel. New locomotives installed in service in the first six months of 1941 totalled 261, of which 62 were steam and 199 electric and diesel. In the same period in 1940 there were 180 new locomotives installed, 45 being steam and 135 electric and diesel.

XUM

Railway Stock Market

Although the recent strong and widespread improvement in security values has been followed by a more cautious attitude in the stock and share markets, there was again no heavy selling reported. In fact, the moderate reaction in prices was attributed mainly to the smaller demand experienced, the disposition being to await the outcome of the latest turn of events in the war. Absence of sellers, and the continued scarcity of many securities in the market, have again been reflected by a firm undertone in most sections of the Stock Exchange. The prevailing view is that over a period, although temporary setbacks must be expected from time to time, the general trend in prices is likely to be to higher levels.

Home railway securities moved fairly closely with the general market trend, but while in many instances they lost part of their recent strong advance, they are higher on balance at the time of writing. Whereas hopeful views persist in regard to the forthcoming terms of the new financial agreement, the prevailing belief is that the improvement in junior stocks has gone far enough for the time being, although it is realised that, if markets become more active, these stocks may continue to attract considerable speculative attention, pending the announcement of the agreement, expected next month. On the other hand, the yield factor must be expected to have an important bearing on the position, and sooner or later this may be reflected by a general upward adjustment of preference stocks, such as L.M.S.R. 1923 preference and L.N.E.R. firsts, which still yield around 8 per cent.; L.N.E.R. second guaranteed, yielding over 5¼ per cent. at the current price; and also Southern 5 per cent. preference and preferred ordinary, yielding 5⅛ per cent. and 8¼ per cent. respectively. These yields are certainly on the generous side, all factors considered, because dividend requirements will be expected to remain covered with a favourable margin, and the full dividends should also be forthcoming in the immediate post war years, when the dividend prospects of the more junior stocks may, of course, be difficult to assess. Among the high-grade investments, L.M.S.R. 4 per cent. debentures at around 102, and L.N.E.R. 4 per cent. debentures at 101 offer good yields for first class stocks, and elsewhere, the return on L.M.S.R. guaranteed and on L.N.E.R. first guaranteed would appear to be quite attractive. In fact, there is an increasing tendency to take the view that yields on home railway junior stocks should not exceed the average yield on industrial and other "equity" securities; the return on prior charges of the main-line companies should, of course, be no higher than that on other first class investment stocks.

Although best prices recorded recently have not been maintained, Great Western ordinary at 40¼ was higher on balance, but the 5 per cent. preference remained around par, and the guaranteed stock showed an easier tendency. Whereas L.M.S.R. ordinary at 15 was fractionally lower on balance, the 1923 preference showed further improvement, and at the time of writing is 48, compared with 46½ a week ago; the senior preference was a point better at 64. At one time considerable attention was given to Southern preferred, which despite a partial reaction, shows a rise on the week from 56½ to 60; the 5 per cent. preference was steady at 97, at which, as already mentioned, the yield seems on the generous side. Southern deferred moved back to 14, which, however, was a higher price on balance. Among L.N.E.R. issues, chief attention appeared to centre on the first preference, which has again shown a tendency to move fairly closely with L.M.S.R. 1923 preference, and is also 48 at the time of writing, a gain of 1½ points on the week. L.N.E.R. first guaranteed at 85, and second guaranteed at 74 were moderately better. In common with other securities, London Transport "C" lost part of its recent rise, but nevertheless, the current price of 45½ was above that ruling a week ago.

Argentine railway securities were firmly held, but were less active, and movements were inclined to be fractional in character. Although, in some directions, the improved prices attracted a little profit-taking, various debentures and preference stocks were better on balance. Talk of a possible interim payment on Canadian Pacific common shares is not regarded seriously, as all question of a dividend is expected to be left until results for the whole year are known.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

	Railways	Miles open 1940-41	Week Ending	Traffic for Week: Total this year	Traffic for Week: Inc. or Dec. compared with 1940	No. of Weeks	Aggregate Traffics to Date: Totals: This Year	Aggregate Traffics to Date: Totals: Last Year	Aggregate Traffics to Date: Increase or Decrease	Shares or Stock	Prices: Highest 1940	Prices: Lowest 1940	Prices: Aug. 22, 1941	Prices: Yield % (See Note)
				£	£		£		£					
South & Central America	Antofagasta (Chili) & Bolivia	834	17.8.41	16,680	+ 8,420	33	603.420	575.210	+ 28.210	Ord. Stk.	11½	3½	6½	Nil
	Argentine North Eastern ...	753	16.8.41	ps. 193,600	+ ps.28,700	7	ps. 1,390.700	ps.1.204,800	+ ps.185,900	,,	3¾	1	2	Nil
	Bolivar	174	July. 1941	3,795	— 255	30	26,867	28,630	— 1,763	6 p.c. Deb.	6½	5	6½	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds	8	5	5⅛	Nil
	Buenos Ayres & Pacific ...	2,801	9 8.41	ps 1,331,000	+ ps.219,000	6	ps.8,133,000	ps. 6,673,000	+ ps.1.460,000	Ord. Stk.	4½	1	4	Nil
	Buenos Ayres Great Southern	5,082	9.8.41	ps.2,105,000	+ ps.352,000	6	ps.11,744,000	ps. 11,516,000	+ ps. 228,000	Ord. Stk.	10⅜	3	6½	Nil
	Buenos Ayres Western ...	1,930	9.8.41	ps.767,000	+ ps.104,000	6	ps.4,489,000	ps. 3,782,000	+ ps. 707,000	,,	8⅜	2	4½	Nil
	Central Argentine	3,700	16.8.41	ps. 1,614,450	+ ps.240,450	7	ps.11,667,550	ps. 10,144,700	+ ps.1,522,850	,,	8¼	2	4½	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	4	½	1½	Nil
	Cent. Uruguay of M. Video	972	9.8.41	22,253	+ 3,801	6	127,878	102,008	+ 25,870	Ord. Stk.	3¾	⅜	2¼	Nil
	Costa Rica	188	June. 1941	19.190	+ 5,543	52	185.942	206.986	— 21,044	Stk.	23½	14	13	15¾
	Dorada	70	July. 1941	13,000	— 200	30	88,300	85,200	+ 3,100	1 Mt. Db	99	97½	97	6⅞
	Entre Rios	808	16.8.41	ps. 299,000	+ ps.73,400	7	ps. 2,103,100	ps. 1,711,200	+ ps.391.900	Ord. Stk.	4	¾	2½	Nil
	Great Western of Brazil ...	1,016	16.8.41	7,400	+ 700	33	295,400	329,600	— 34,200	Ord. Sh.	4/-	1/-	3/16	Nil
	International of Cl. Amer. ...	794	June, 1941	$514,782	+ $50,639	26	$3,036,575	$3,305.093	— $268,518	—	—	—	—	—
	Interoceanic of Mexico ...	—	—	—	—	—	—	—	—	1st Pref.	9d.	9d.	½	Nil
	La Guaira & Caracas... ...	22¾	July,1941	8,030	+ 1,855	30	43,245	45,615	— 2,370	—	6	4	—	—
	Leopoldina	1,918	9.8.41	30,025	+ 7,075	32	783,977	698,916	+ 85.061	Ord. Stk.	2-7/16	¾	2⅛	Nil
	Mexican	483	14 8.41	ps. 259,100	+ ps. 18,000	6	ps. 1,898,600	ps. 1,724,800	+ ps.173,800	,,	2/11¼	⅜	⅜	Nil
	Midland of Uruguay ...	319	June, 1941	14,941	+ 4,304	52	151,105	131,660	+ 19,445	—	—	—	—	—
	Nitrate	386	15.8.41	8,693	— 1,587	33	77,332	113,701	— 36,369	Ord. Sh.	2¼	1	2⅛	5⅜
	Paraguay Central	274	16.8.41	$3,747,000	+ $892,000	7	$25,192,000	$26,254,000	— $1,062,000	Pr. Li. Stk.	41	36	36½	8-7/16
	Peruvian Corporation ...	1,059	July, 1941	65.550	+ 129	4	65,550	65,421	+ 129	Pref.	4	1	2½	Nil
	Salvador	100	14.6.41	c9,392	— c598	50	c782,376	c956,247	— c173.871	—	—	—	—	—
	San Paulo	153½	10.8.41	41,250	+ 5.585	32	1,201.993	1,184,106	+ 17,887	Ord. Stk.	50	23	34½	5⅛
	Taltal	160	July. 1941	3,180	+ 1,095	4	3,180	2,085	+ 1,095	Ord. Sh.	15/1½	⅜	⅜	Nil
	United of Havana	1,346	16.8.41	18,429	+ 4,322	7	130.528	113,199	+ 17,329	Ord. Stk.	⅜	¼	1	Nil
	Uruguay Northern	73	June, 1941	1,127	+ 260	52	13,937	13,222	+ 715	—	—	—	—	—
Canada	Canadian National	23,579	14.8.41	1,155,313	+ 223,959	32	35,753,505	29,039,547	+ 6,713,958	—	—	—	—	—
	Canadian Northern	—	—	—	—	—	—	—	—	Perp. Dbs.	86	68	91½	4⅜
	Grand Trunk	—	—	—	—	—	—	—	—	4 p.c. Gr.	105½	95-½	101¼	3-7/8
	Canadian Pacific	17,153	14.8.41	860,800	+ 175,600	32	25,549,800	19,508,600	+ 6,041,200	Ord. Stk.	9-7/16	4⅛	9⅛	Nil
India†	Assam Bengal...	1,329	—	—	—	—	—	—	—	Ord. Stk.	99⅜	71	100	3
	Barsi Light	202	31.5.41	5,385	+ 1,808	9	36,615	24,607	+ 12,008	—	—	—	—	—
	Bengal & North Western ...	2,086	July,1941	251,700	+ 24,153	18	1,059,825	1,065,348	— 5,523	Ord. Stk.	283	234	305	5½
	Bengal-Nagpur	3,269	31.5.41	283,725	+ 21,334	9	1,509,300	1,552,418	— 43,118	,,	96	83⅞	100½	4
	Bombay, Baroda & Cl. India	2,986	10.8.41	316,275	+ 93,825	19	3,872,475	3,608,850	+ 263,625	,,	108	99	108½	5⅛
	Madras & Southern Mahratta	2,939	20.5.41	193,875	+ 889	7	974,550	977,665	— 3,115	,,	104	97⅞	102½	7-7/16
	Rohilkund & Kumaon ...	571	July 1941	54,975	+ 4,907	18	247,875	252,087	— 4,212	,,	284	238	300	5-7/16
	South Indian	2,500	20.5.41	140,378	+ 13,073	7	691,539	626,491	+ 65,048	,,	93½	83	97½	4⅛
Various	Beira	204	June, 1941	78,601	—	39	652,953	—	—	—	—	—	—	—
	Egyptian Delta	610	10.6.41	7,016	+ 2,269	10	45,684	33,012	+ 12,672	Prf. Sh.	7/10½	⅜	1	Nil
	Manila	—	—	—	—	—	—	—	—	B. Deb.	53	44⅛	61½	5-1/16
	Midland of W. Australia ...	277	Mar. 1941	14,597	+ 2,092	39	134,201	115,376	+ 18,825	Inc. Deb.	88	80	87½	6⅛
	Nigerian	1,900	31.5.41	55,965	+ 26,234	9	488,613	342,694	+ 145,919	—	—	—	—	—
	Rhodesia	2,442	June. 1941	454,594	—	39	4,217,610	—	—	—	—	—	—	—
	South Africa	13,291	5.7.41	772,766	+ 54,110	14	10,091,360	9,098,710	+ 992,650	—	—	—	—	—
	Victoria	4,774	Apl. 1941	999,841	+ 183,876	44	—	—	—	—	—	—	—	—

Note. Yields are based on the approximate current prices and are within a fraction of ⅛ Argentine traffics are given in pesos

† Receipts are calculated @ 1s. 6d. to the rupee